OFTWARE COVERED: 3DS MAX • LIGHTWAVE • MAYA • BLENDER • ZBRUSH

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3DArtist

28

Practical inspiration for the 3D community

Hard-surface Modelling

Build an original spacecraft design from a professional 2D concept

In the Workshop

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- Night-time interior lighting
- Postprocess a game character in the Marmoset Toolbag
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Texture in LightWave

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Syd Mead

This legendary artist shares his industry expertis

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Artist info

Stefan Morrell

Personal portfolio site
http://stefan-morrell.com

Country New Zealand

Software used
3ds Max, finalRender, Photoshop

Stefan's stunning space scene is the opener to this issue of **3D Artist**. Its blend of beautiful architectural and vehicular design is what really attracted us to the image. Who knows, in a few decades' time we could very well be looking out the window to a view such as this! Wouldn't that be awesome?

Welcome

to the magazine and 116 pages of amazing 3D

Every issue you can count on...

1. **116 pages of creative inspiration**
2. Behind-the-scenes guides to images and fantastic artwork
3. **A CD packed full of creative goodness**
4. Interviews with inspirational artists
5. **Tips for studying 3D or getting work in the industry**
6. The chance to see your art in the mag!

Hello there, and welcome to 3D Artist. As you can see from our stunning cover image, we've gone all 'intergalactic' this issue to bring you a bevy of awesome inspirational 3D to indulge in.

Kicking things off is the father of futuristic design, Syd Mead. This art master is responsible for influencing many of the 3D greats we have today, as well as creating new worlds and vehicles that have stood the test of time. You can't afford to miss it.

That said, though, the rest of the mag is pretty flippin' sweet too – even if we do say so ourselves! Where else can you learn how to generate extra cash, build a spacecraft *and* master the craziness and beauty of abstract art all in one magazine? Enjoy!

Sarah Slee, Deputy Editor

This issue's team of expert artists...

Chee Ming Wong

Professional concept artist Chee has taken time out to create a beautiful concept for our spaceship tutorial. Turn to p50 for more

Richard Yot

Curious worlds and mythical creatures are creeping out of books to form Richard's papery creations. Be sure to check it out

Gavin Goulden

Gav's all about the Marmoset this issue. Not of the furry kind, you understand, but of the Toolbag variety. See the Masterclass

Ross Board

Ross returns once more to offer his tips and advice. This time he talks through night lighting in your interior arch-vis scenes

Lee Griggs

Abstract is a tricky subject to get right for many, but Lee offers his tips to producing high-gloss surreal art in a variety of software

Richard Culver

The Blender guru is back! This time he's got his breeches in a twist as he covers cloth dynamics in this freeware program

Andrzej Kuziola

Venture into the world of ZBrush 4 with Andrzej, as he takes you back to basics. It's a great starting point to digital sculpting

Ted Lockwood

Nicknamed 'CrazyHead' – the image, not Ted – this gal is not to be messed with... or maybe she is. Make her from scratch yourself and see

Eugenio García Villarreal

If you love the retro things in life, Eugenio's scene could be for you. Get your detective hat on and investigate exactly how it's made

Wiktor Öhman

This Swedish hard-surface modeller had the rather awesome job of remaking Chee's concept in 3D. Check out part one on p52

Duncan Evans

Our man Evans has been out gallivanting again. This time it's with a Cornish arch-vis company catering to a global clientele

Craig A Clark

Craig's back and this time he's putting LightWave 10 through its paces. Find out how it fares by flicking to the Reviews section

Sign up, share your art and chat to other artists at www.3dartistonline.com

3DArtist

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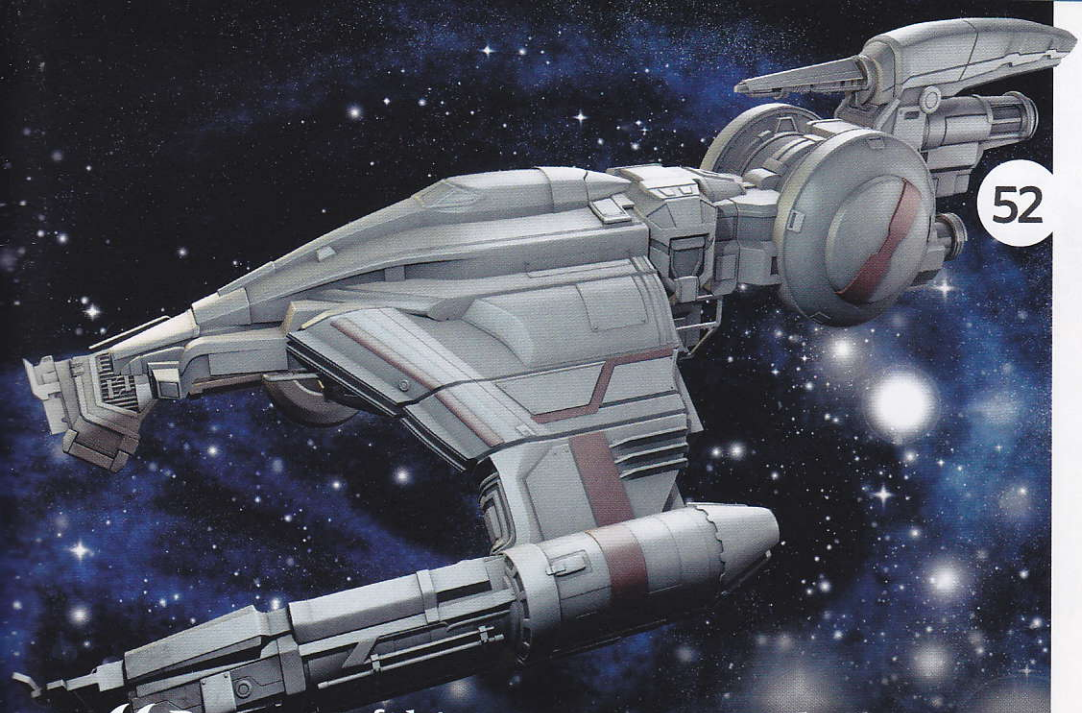

“Part one of this two-part tutorial takes you through the modelling of the Scorpio, aiming for an illustrative finish”

Wiktor Öhman creates a 3D spacecraft from a 2D concept. **Page 52**

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Video course: 82 minutes of tuition

Follow the final parts of the Maya head-modelling video tutorials

Plus models, resources and **30 sound effects**

Turn to page 112 for the complete disc contents

On the Disc

Four free models

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There's even more inside...

Turn the page to discover the interviews, reviews, industry advice and more that we've packed into this issue...

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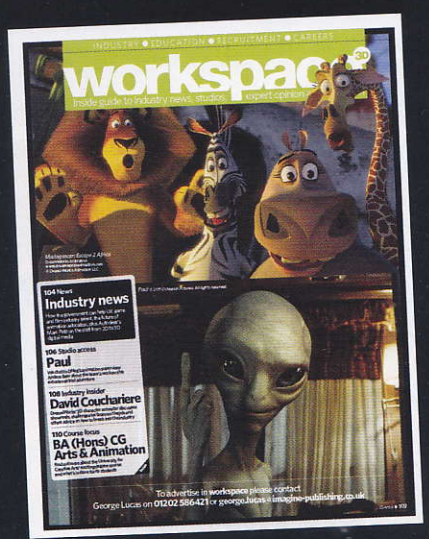
See your artwork here...
Create a gallery today at
3DArtist online.com
Share your art, comment on other artists' images

"Catering to an area that isn't filled already and creating something unique and original will get you a good name"

Stefan Morrell offers his tips for selling your 3D models and scenes. **Page 34**

workspace 3D
Inside guide to industry news, studios, expert opinion & education



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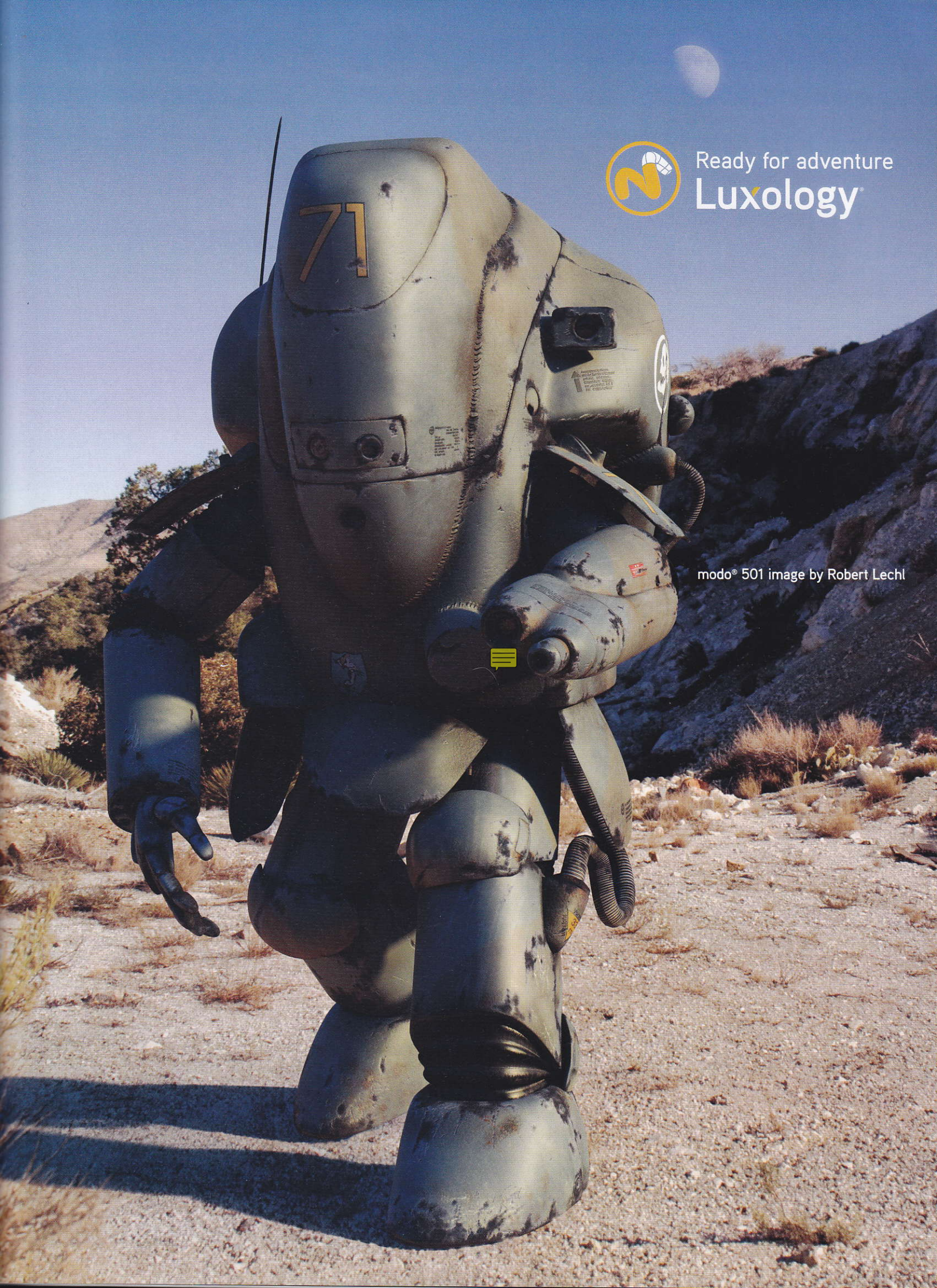
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Ready for adventure
Luxology
modo® 501 image by Robert Lechl

WELCOME TO THE GALLERY

Five pages of great artwork from the 3D community

Images we love!

Artist info

Martin Nikolov

Personal portfolio site N/A

Country Bulgaria

Software used modo, ZBrush, Photoshop

Work in progress...

"The concept for this is by Nevena Nikolcheva (http://neni-nen-nen.blogspot.com). I started it as a fast sculpt, but then decided to make a render of it. I spent two days sculpting and three more rendering"

Martin Nikolov, *Little girl,* 2011

Featured artists

Martin Nikolov

There's something very creepy about this girl, though the frogs are cute!

Maarten Verhoeven

The power of ZBrush never ceases to amaze us. Great sculpt!

Patryk Habryn

Don't let the fun nature of this image belie the advanced texturing skills

Brett Patrick Sinclair

Brett describes this eyecatching lady as an 'angel with a twist'. It's a big twist

Nicolas Richelet

This portrait thinks outside the box, using the little-known RailClone

Get your artwork featured in these pages

Simply send it to the **3D Artist** Gallery. Here's how...

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Hang your art in our online gallery and get selected for the magazine

1. Register with us

Check out the website below and click on Register. Choose a username and password and you're ready to go.

www.3dartistonline.com

2. Upload your images

Once registered, you can upload images to your gallery – there's no limit on numbers but check the size criteria.

3. Tell us about them!

Have an image you feel passionate about? Drop editorial an email at **sarah.slee@imagine-publishing.co.uk**.

Email or post

You'll be missing out on a thriving 3D community, but if you'd rather submit your work by email or post, here's how. Make sure your image is at least 3,000 pixels on the longest side, save it as a maximum quality JPEG or zip it up as a TIFF and email it to the address below. Please include your contact details! If you've created a Pixar-beating animation and want to see that featured on the cover CD, then save it onto a CD and post it to us. You can also send your images on CD. The addresses are:

sarah.slee@imagine-publishing.co.uk

The Gallery, 3D Artist, Imagine Publishing, Richmond House, 33 Richmond Hill, Bournemouth, Dorset BH2 6EZ

Comment on more great 3D art...

Head straight over to **www.3dartistonline.com**, register and you can leave comments for other artists. Some of the people featured here already have their galleries, so get online and join our club!

Create your gallery today: www.3dartistonline.com

The team Loves

"Maarten is a master of traditionalist-style sculpts in ZBrush. This beautifully freakish diva is lit and rendered to perfection, with looks to kill!"

Lynette News Editor

Artist info

Maarten Verhoeven

Personal portfolio site
http://mutte.cghub.com

Country Belgium

Software used
ZBrush, KeyShot, Photoshop

Work in progress...

"I wanted to create a character that could scare me, without going in a monster-like direction. After looking at images of inbreds, freaks and trailer trash, this beautiful lady is what came out. She's mighty purdy for a skinny girl..."

Maarten Verhoeven, *Trailer Park Queen,* 2011

Artist info

Patryk Habryn

Personal portfolio site
http://phabryn.com

Country Poland

Software used
Maya, mental ray, Photoshop, ZBrush

Work in progress...

The team Loves

"A genius concept packed with expression! Love the starfish's nervous look as the cheeky jellyfish parades him around; the SSS effect beautifully highlights the jelly-like qualities, while the underwater post work sells the shot"

Lynette News Editor

"A jellyfish avoiding a marine snow shower with a starfish umbrella. If you're interested, there's a rigging demo of the starfish character at **http://vimeo.com/20556340**"

Patryk Habryn, *Starfish Umbrella,* 2011

The team Loves

Elegantly defying the deformations of her angelic body in this tranquil pose, the angel's beauty overpowers her monstrous qualities as she hovers delicately against a calming night sky

Lynette News Editor

Artist info

Brett Patrick Sinclair

Personal portfolio site
http://brettsinclair3d.blogspot.com

Country South Africa

Software used
Maya, Mudbox, Photoshop

Work in progress...

Created for the CGHub 'Warriors' challenge, this is an angel with a twist. Battling demons in the underworld, once defeated she absorbs their souls so they can't come back... but in doing so, she's been deformed by the demons that inhabit her body

Brett Patrick Sinclair, *Arella,* 2011

The team loves

I love that this image was made through pure experimentation. Nicolas's creativity has produced unique results in a great composition

Sarah Deputy Editor

> The image was made for a challenge organised by the **www.ronenbekerman.com** website and Itoo Software, the RailClone publisher. I realised the plug-in could be used for other things like abstract work, as a kind of particle emitter or scatterer. So I began experimenting with spline scattering and the vision of a girl made of tiny little cubes appeared progressively in my mind

Nicolas Richelet, *Falling Apart*, 2011

Artist info

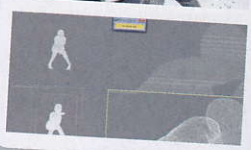
Nicolas Richelet

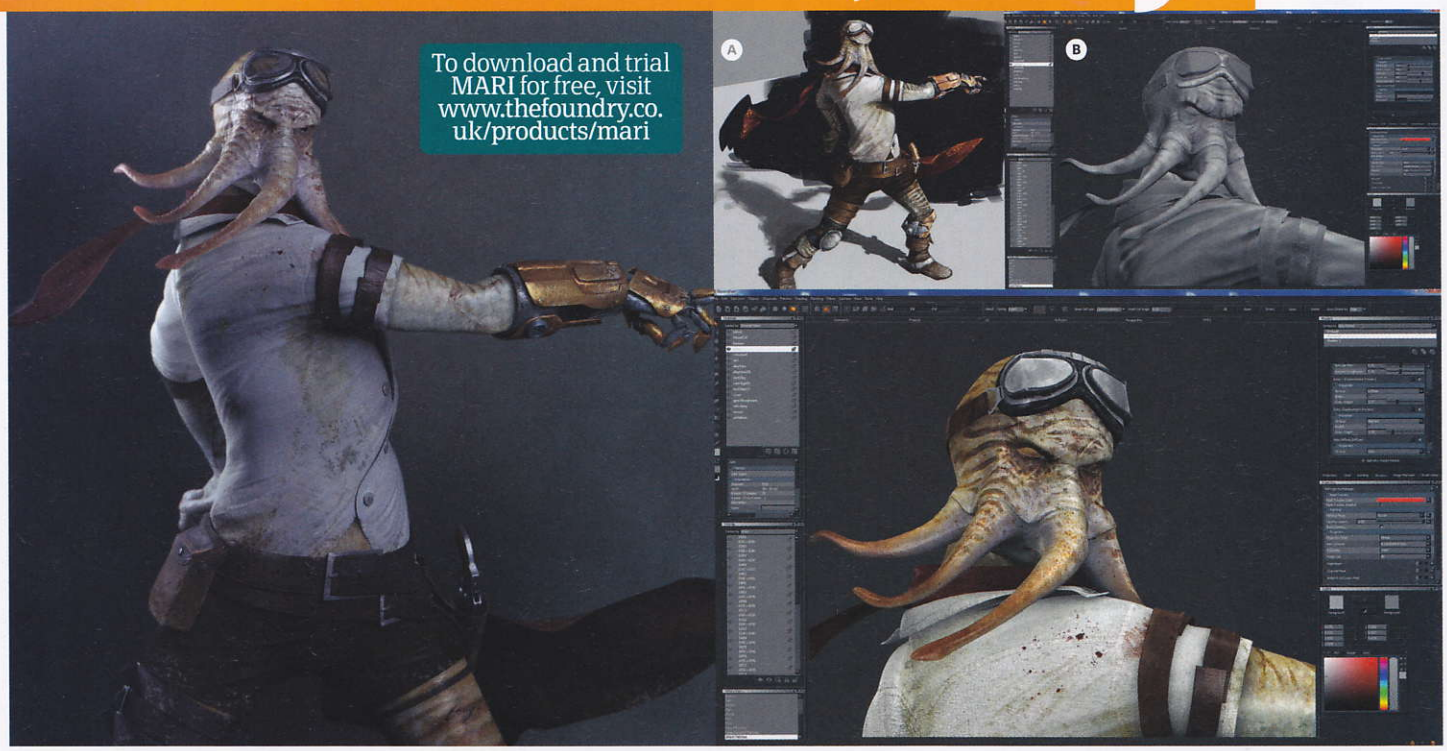
Personal portfolio site
www.nicolasrichelet.com

Country France

Software used
3ds Max 2011, RailClone Lite, V-Ray 2.0, Photoshop

Work in progress...





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Do you use MARI? Did you follow the competition? Discuss this and more with your fellow **3D Artist** readers at: **www.3dartistonline.com/forum**

Detailing Dezkin – the MARI way

Challenged by The Foundry with only three weeks to spare, Chris Welch out-painted his texturing competitors with a winning MARI paintjob

When The Foundry called out to discover the top MARI texturing talents the world had to offer, providing one heck of a model – enter Dezkin – for the challenge, Chris initially responded: "Wow! That's a lot to texture! This is due when?!" But excited by the opportunity to see how far he could push the textures in a short space of time, Chris got stuck in. "The biggest challenge – and what made him so fun to texture as well – was the fact that he was so varied material-wise," Chris explains. "He's got bits of leather, cloth, metal, skin... Each area had to be approached uniquely and individually, and since this was a competition that wanted somewhere around 30 4K or higher textures, it meant that every prop and asset on the model had to be treated as its own asset that would hold up by itself." And with Jack Greasley and Leigh van der Byl judging, it only made Chris push himself harder. "I knew they would have really sharp eyes, so I had to make sure my work would stand out to them," Chris says.

> "Looking over him initially was an intimidating moment for me, as the model had so much room for texturing interpretation"
> **Chris Welch**

Before MARI, Chris's texturing workflow involved as much time in Photoshop as possible, and he always found flattening UVs tough work. ZBrush offered painting options, but it had its limits. And while the process of painting over Maya renders in Photoshop and projecting them back through the camera in Maya worked well for a while, it was slow, and he was mindful of edge bleeds and working with multiple objects. But all this is something MARI deals extremely well with. Chris explains: "MARI has several tools that speed up the process so much. I didn't have to worry about edge bleeds when using the edge mask; I could paint through the object instead of just the front faces to add large gradients, and switching between paint modes – Normal, Multiply, Overlay, etc – helped me add the texture and colour variance I needed on the fly." Winning a full MARI licence and NVIDIA Fermi 5000 graphics card, Chris is well set up for the future. "I'd like to collaborate with others and do an animated short," he adds. "This new gear will definitely help with that!"

A Chris tried all sorts of bizarre concepts, in the end choosing to follow the one he felt much more relatable – basically a sci-fi cowboy with cuttlefish-like skin

B Using shaders to preview things like bump and displacement, masks, and specular roughness meant Chris spent less time waiting for renders in Maya

Let's not forget...

Nathan Boyd came a very close second with his own mud-splattered interpretation of Dezkin, and is currently now recovering from the lack of sleep endured while bringing this compelling creature to painted life!

Blog watch

A guide to inspiring and informative blogs!

The Concept Design of Jerad S Marantz

A little of everything

Lead designer at the Aaron Sims Company, Jerad S Marantz has worked for many respectable people (the kind to make us weep with joy), and his credits include the likes of *Sucker Punch* and *Guild Wars*. Talents in sculpture, painting, illustration, ZBrush and Photoshop contribute to concept design success, and with over ten years' experience in films and games under his belt, he's often found teaching at Gnomon School and the Concept Design Academy. If we're going to learn a thing or two about concept design, we'll do it right here!

http://jeradsmarantz.blogspot.com

3D Sketchbook

Computer comforts

For fearless sculpting practice, Matthew Kean takes his computer, a blank canvas and a ZSphere, and simply sees where they take him...

Matthew Kean www.matthewkean.com

Self taught in 3D after studying illustration at university, Matthew has one goal: to, as he puts it, "find the character within the model." Matthew explains his 3D sketching workflow: "Using ZSpheres I block in a general form, which helps me work quickly and not get attached to anything. I don't sketch beforehand; I want the design process to be within the sculpting itself. Once I'm happy with the shape I move up two levels and go to town with the Clay brushes! I find that all the Clay tools allow for quick decision-making and really free your hand to do as it pleases. Once I'm ready, I jump up two more levels and attack with the Standard brush set to a very fine shape, going over wrinkles and such to enforce the design and add high-level detail." Matthew is currently looking for freelance opportunities – visit his website to discover more of his quirky characters.

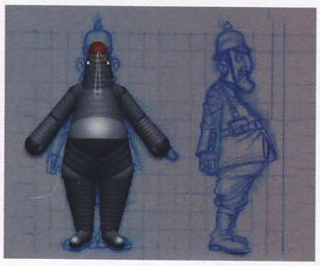
Matthew shares his top tips for speedy concept exploration in ZBrush:

- Work loose and quick – my sketches are only a few hours per piece
- Check your silhouette often!
- Believe that what you're sculpting is alive – people will identify with it if the creation is believable
- Study, study, study... and repeat! Always be ready and wanting to learn

Character modelling in style

Blur Studio artist Alessandro Baldasseroni reveals essential production workflow in his new DVD from The Gnomon Workshop

Italian-born 3D artist Alessandro made the move to California following worldwide recognition for his work through online communities and various publications. Now lead character artist at Blur Studio, his credits include cinematics for *Star Wars: The Old Republic*, *The Force Unleashed*, *Halo Wars* and so many more. This 294-minute training DVD gets right to the heart of his 3ds Max and ZBrush workflow when modelling a stylised character for production from a given concept. Watch a sample clip at www.thegnomonworkshop.com.



Masterpiece

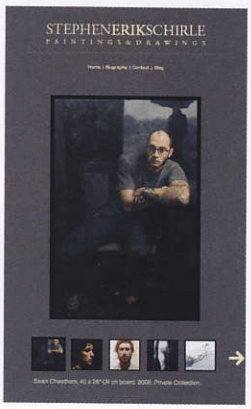
Mastering portraits

For Stephen Schirle, this 3D portrait exercise was a first, but the sheer quality of the result clearly demonstrates some immense art skills

Stephen Schirle www.seriks.com

Using lots of test renders, Stephen will go back and forth between adjusting the model, textures and render settings until he's satisfied with the results

Visiting Stephen's website is a mindblowing experience – it's difficult to believe the reality that one man can capture with traditional media. With his extreme talents lending beautifully to digital media, his concepts are equally as captivating and pure, demonstrating an obsessive eye for detail, colour, design and mood, and an enviable understanding of form and anatomy. Although his background is mostly in traditional oil painting and digital painting, 3D has become more and more exciting to Stephen. "I'm always curious to try new approaches and technologies that can help me create something beautiful," Stephen says. A fast learner and natural problem solver, he describes his basic 3D workflow that was used on this entrancing 3D portrait: "I start off in ZBrush with ZSpheres and sculpt as far as I can until it's time to clean up the topology, which I do with 3D-Coat's excellent retopology tools. I bring it back to ZBrush to continue to refine areas and get into the very fine details of pores and wrinkles. Textures start out in ZBrush just as a base, but I end up redoing most of that in Photoshop. Then it's off to render with some nice subsurface scattering and eyeballs – plus lots and lots of test renders!"



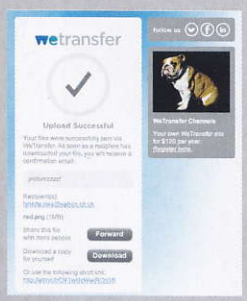
Free 3D Resources

Brighten up file transfers

Forget the drudgery of using FTP sites and waiting endlessly for your free file-sharing site to let you download with this fun free transfer site!

WeTransfer

Web: https://wetransfer.com



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Artist spotlight

A vision becomes reality

If a fully formed creepy character with empty eye sockets and Maurice Sendak-style pyjamas popped into your head, you'd have to make it for real!

Peter König http://peterkonigart.com

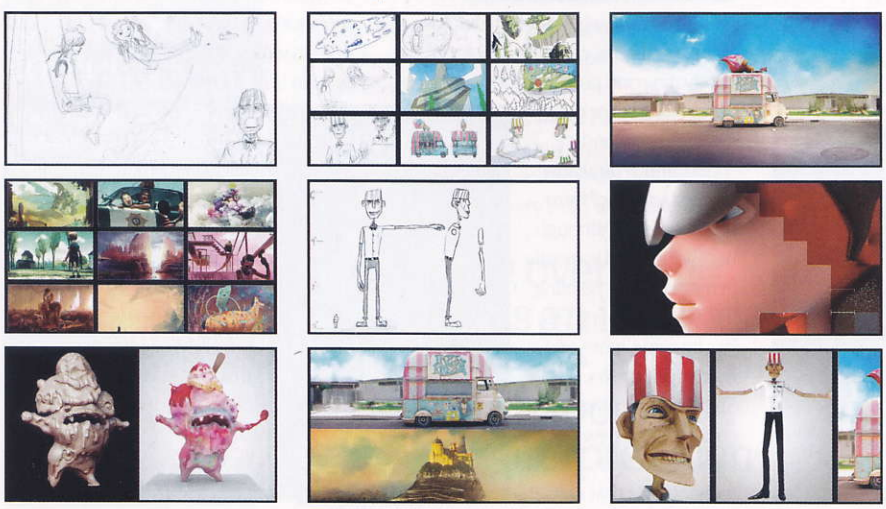
While some characters evolve over time for Peter König, this one sprang to life in a flash. "I see him as a character in a spooky children's book or a short film," Peter says. "I'd love it to be one in a series of creepy collectable vinyl toys." Working at Valve Software, although Peter can't tell us about the great stuff he's currently working on there (other than "it's super cool and everyone's going to love it!"), he happily reveals how his spookily cute toy prototype evolved in 3D. "Lately I've been working more in 3D-Coat for the early concept stages," Peter says. "Voxels are amazing and give you such freedom to create shapes quickly. Traditional sculpting is still the most satisfying for me artistically, and the majority of my design work still starts in Photoshop, but the speed and versatility of the newer 3D packages are hard to resist. I think it's crazy that I can imagine something, go into 3D-Coat and ZBrush for a bit, mess around, and then a few hours later have a physical object in my hand (in colour, no less!). It still feels like science fiction to me." Printed on a ZPrint 650 3D printer, following some excess powder removal and glue reinforcements to harden the delicate model, Peter's model was brought to life. "You want to avoid breaking things before they're reinforced, so de-powdering an intricate shape with thin parts can be a challenge," Peter adds. "Depending on the piece, you may find it easier to print small parts as separate objects and then assemble them afterwards."

Most of the work was done in 3D-Coat, working in voxels; with the figure and base near completion, Peter then finished up in ZBrush. To print, he used the ZPrint 650 by Z Corp

behind the scenes

Ike's Dream

Rob Sanborn, executive producer at Gentleman Scholar, gives an insight into the making of Ike's Dream, a death-defying adventure that took four months to complete **Gentleman Scholar** http://gentscholar.com



In a coming-of-age story of good versus evil, this heartwarming tale was spurred by childhood memories, creating a narrative-driven short film that will no doubt be hitting film festivals this year. The animation is filled with charm and nostalgia as the creators consider the act of remembering and forgetting. "Can you ever trust a memory?" the antagonist asks. Spurring us to think of our own lost memories and the naïveté of childhood, the film aches with sadness, while its beautiful colour palette entices you – it's good enough to eat!

"Reference after reference helped us create our world," Rob explains. "We loved the elongated lines of the evil Ike, complemented with sharp angles and a ruffled, unkempt wardrobe. The children would be much more angelic, simple and soft. We created a few environmental styleframes to help flush out the colour of the spaces as our world consisted of three different environments. From there, we built the characters in Maya and started to move the cameras around them. Our story was in place, but it was empty without the detailed cinematography and animation that soon followed. With the edit locked and our animation under way, we began to texture and light each individual scene in V-Ray... creating the style and mood we were looking for."

© Emily Coleman
© Photo: Joseph Coleman

Sculpting for change

Senior studio artist at Full Sail University, Emily Coleman sculpts to raise environmental awareness

www.emilysculpts.com

Following several years' work on a series of small-scale dragon sculptures, each merging with the environment and reflecting one of the seasons, *The Forest Emperor* is to be the father of all Emily's sculptures! This large-scale (six-foot long) project is a first for her, and hosting an entire ecosystem on his back alone there will be lots of learning along the way. "There isn't a whole lot of information out there for beginners and I enjoy helping those that are interested in subjects that I have experience in," Emily says. "I am hoping for this to become a real community-based project where viewers can ask questions and watch me work on the sculpture in real-time." Emily hopes to raise awareness about conservation and environmental issues through her process, as well as showing the final sculpture at local galleries and online.

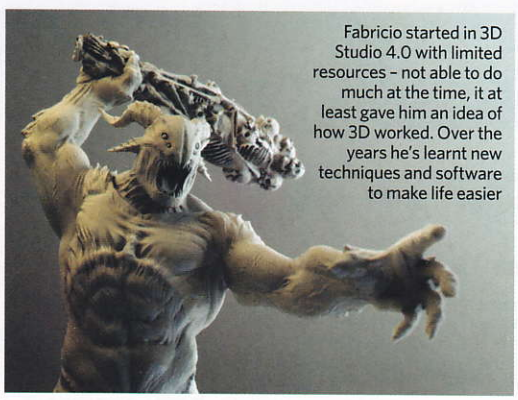
Inspiration corner

Keeping up the pace

Like many artists, the outstanding visual effects in Jurassic Park and the incredible Toy Story animations convinced Fabricio Moraes of a career in CGI

Fabricio Moraes http://fabmoraes.cgsociety.org

It's the ever-raising bar of technology that keeps Fabricio inspired. We find out how he's upgraded his pipeline to allow for faster character creation



Fabricio started in 3D Studio 4.0 with limited resources – not able to do much at the time, it at least gave him an idea of how 3D worked. Over the years he's learnt new techniques and software to make life easier

"CGI is much easier to make nowadays and, since I put ZBrush in my pipeline, it's got even better. With this tool I can not only finalise an organic and complex model faster, but also study the character shapes and come up with a more accurate base in half the time...

"I dig into forums, watch movies and play videogames – all these examples are great sources of inspiration. I love to watch making-ofs and understand the intentions and visions of directors behind great productions."

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Register with us today at
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to view the art and chat to the artists

Pictures of the week

THESE ARE THE IMAGES THAT WERE AWARDED PICTURE OF THE WEEK IN THE LAST MONTH

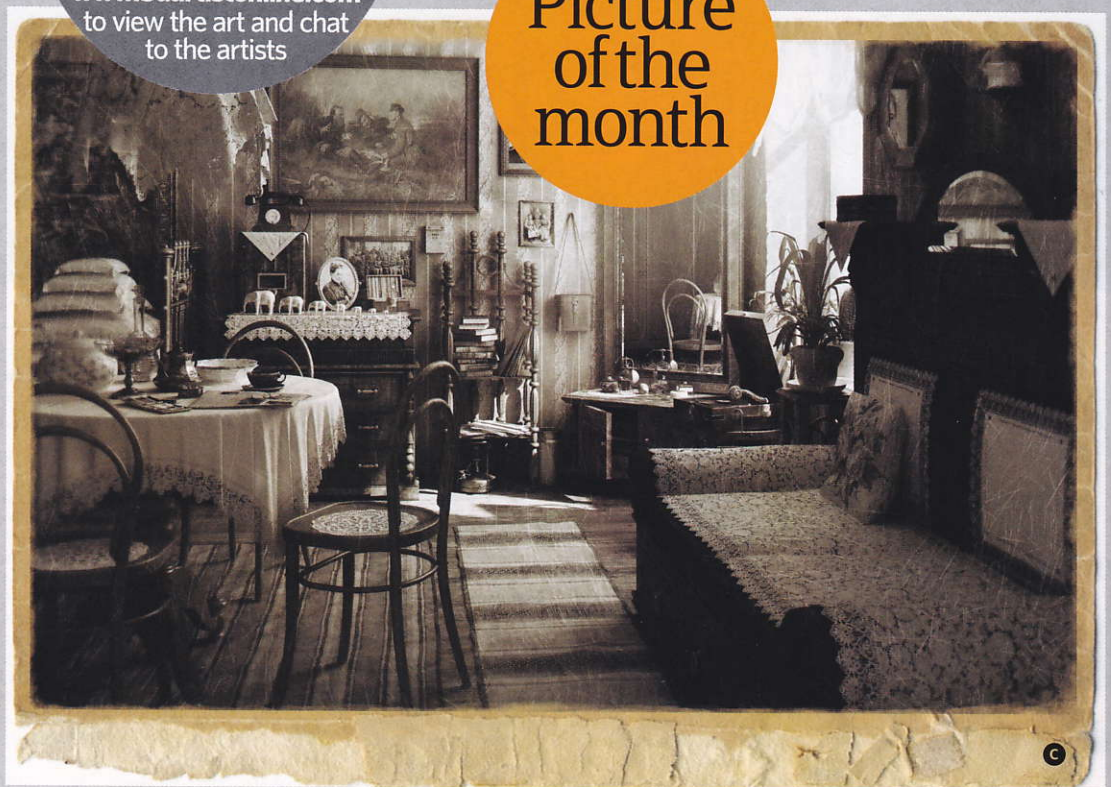
A Larva
» Kamil 'Mookie' Kuklo
Mookie says: "He's getting ready for a real feast!"
We say: "Full of personality with great composition"

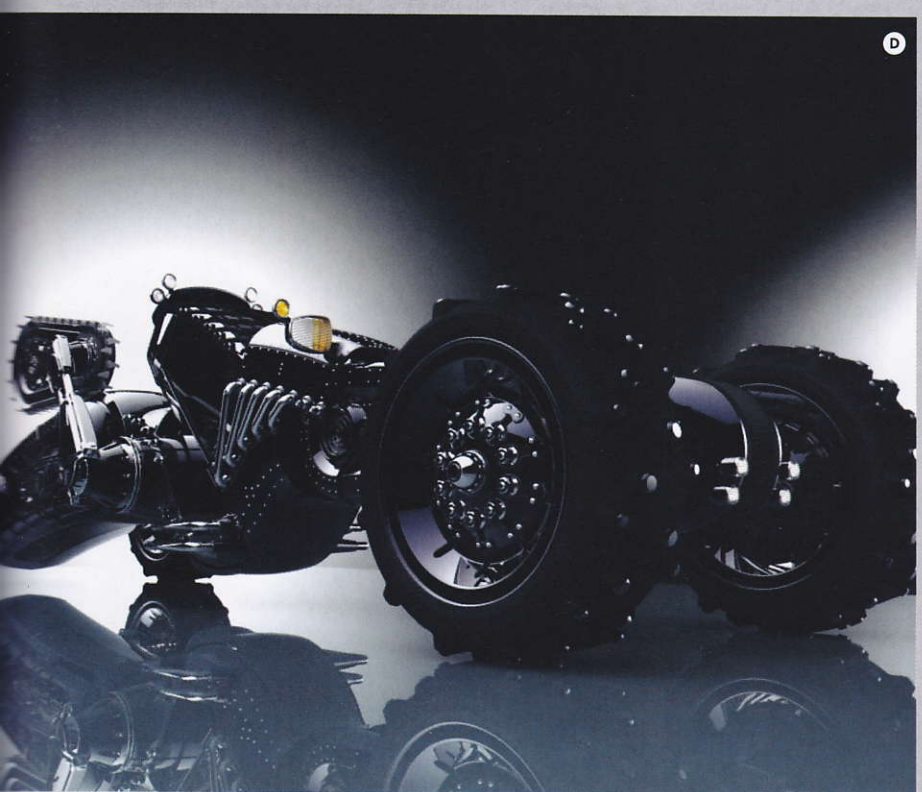
B Woopee World
» Teodoru Badiu
Teodoru says: "This image was modelled, textured and rendered in modo"
We say: "A bold colour palette with interesting shapes"

C Moscow, 1949
» Vladimir Kuzmin
Vladimir says: "I spent a long time collecting and painting textures, gathering materials and models"
We say: "Time well spent. Excellent attention to detail"

D RLC Vehicle
» Simon Williamson
Simon says: "Extreme rapid land-clearing equipment with chainsaw attachment. Modelled in Rhino and rendered using KeyShot"
We say: "Interesting vehicle design with a super-realistic metallic finish"

Picture of the month





B.O.T. (right)

» **Tomas Machado**

Tomas says: "Entirely modelled in ZBrush and rendered with Maxwell Render. The base it's standing on was made in LightWave, with minor postwork done in Photoshop"

We say: "Nice metallic finish – we like the shape of his feet too"

Cold Island (below)

» **Robert Schlenker**

Robert says: "This was created in Vue 8 Infinite"

We say: "A very calming image... looking at it, you can almost hear the sound of the waves"

Old House (above)

» **Steffen Wiesener**

Steffen says: "This village was destroyed in 1980. I'm reconstructing it using 3ds Max and mental ray"

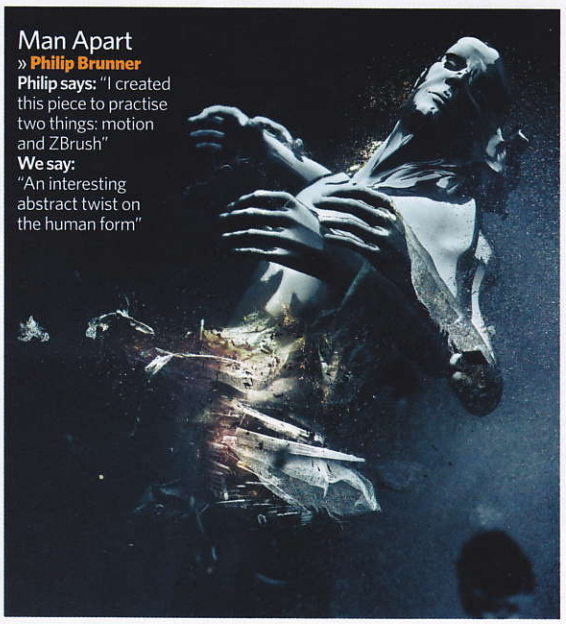
We say: "Great textures and lighting"

Man Apart

» **Philip Brunner**

Philip says: "I created this piece to practise two things: motion and ZBrush"

We say: "An interesting abstract twist on the human form"



THE FATHER OF INSPIRATION

Name
Syd Mead
Website
www.sydmead.com
Country USA
Tools of the trade Syd uses a Mac with a variety of software including Photoshop, PowerCADD, SketchUp, QuarkXPress and Final Cut Pro. His preferred medium for full-colour images continues to be Winsor & Newton Gouache and Water Colour paint applied to illustration board with Winsor & Newton #2 sable brushes
Client list
With clients including everyone from Honda, National Geographic, Space Design International, Apple and Panasonic to Disney, Warner Brothers, Paramount Pictures, Hot Wheels and *Playboy* magazine, Syd has concepted everything from automotive designs, logos, game levels, motorcycles and action figures to disco interiors, adventure arenas, golf courses, rock group stage sets and a 420-foot yacht. Visit **www.sydmead.com/v/10/sydmead** to see to believe the full extent of Syd's impressive clientele

THE SHEER SCALE OF SYD MEAD'S INFLUENCE ON THE ART WORLD IS IMMEASURABLE. WITH GOOSEBUMPS, LYNETTE CLEE TALKS TO SYD PLUS A HANDFUL OF THE ARTISTS HE'S SO UNASSUMINGLY INSPIRED

"...no matter what our age... the day-to-day thrill of life is the ultimate elixir"
Syd Mead

At a time when an impressionable youth were getting to grips with their crayons, ready to embark on a world of artistic discovery, Syd Mead's art was to hit their screens, changing lives for ever. *Blade Runner. Aliens. TRON.* Sweeping a new generation of artists up in futuristic awe as giant spaceships, flying cars and glowing architecture formed the iconography that would later shape their own journeys in art and design, Syd Mead's shapes and graphic style became a language – the language of science fiction. "I must have been around nine years old when I first saw Mead's work," 3D content creator Stefan Morrell from New Zealand says. "My father brought home a magazine filled with concept art from the *Blade Runner* movie – it had the coolest futuristic props and vehicles, all intricately sketched and coloured with a gritty style. His environments in *Blade Runner* were exotic and dripping in gritty detail. It was many years later that I finally put a name to the work, yet through all those years Mead's work remained a constant in many of the films I was enjoying." Whether the artists of the future knew of Syd at the time or not, his work was attaching itself en masse to their inspiration glands. "Looking back now I believe *Blade Runner* – especially Syd's work – helped me a lot in discovering science fiction and architecture, of which both are now a passion," Swedish 3D artist Rudolf Herczog adds. Neil Maccormack, a UK freelance artist residing in Switzerland was also blown away when he discovered Syd's work several years ago while just getting into digital and concept artwork. Neil tells us: "I was convinced the majority of his work was digital and that he was a young up-and-coming artist. I did more research and discovered his portfolio, and then realised I had been seeing his work in all my favourite sci-fi films for the last 20 years or so."

Excite is one of four final illustrations depicting a non-smoking social ambience of future lifestyle, as featured on pages 50-51 of *Sentury II*

VISUALISE LIKE A MASTER

For Syd, it's all about scenario. Learn from the best as he gives an insight into the process of evolution a design takes in his mind

STEP ONE: PROBLEM SOLVE

"Designing is the discreet arrangement of elements, whether painting a picture, designing an artefact, composing music, writing a novel or constructing computer program code," Syd Mead explains. "For what I do, the first step to solve any problem successfully is to saturate your mind with information about the problem. You must know what the problem is that you are going to solve before you start. This sounds pretty obvious, but you would be surprised at how many times that step is skipped – probably the reason why there are so many ugly products, cars, stories, graphics and movies!"

STEP TWO: FORGET WHAT YOU KNOW

"Once you have a store of information the next step is to pretend you don't know what you just learnt. That becomes part of the 'background' parameter as you progress to thinking up some really wild ideas that might be useful."

STEP THREE: REVIEW AND ENJOY

"The third step is to review step two and start matching your wild ideas to the required parameters of the problem. The result then enjoys the refreshing attribute of being 'new' and the practicality of being actually usable."

The Gnomon Workshop launched a DVD series by Syd Mead to introduce his step-by-step methodology to the world over, inviting others to experience the design language of a true legend first hand. Over four DVDs titled *The Techniques of Syd Mead*, you can explore:

- Thumbnail sketching and line drawing
- Value sketching
- Creating the colour preliminary
- Final gouache rendering.

Visit www.thegnomonworkshop.com and select Syd Mead from the Instructor menu to find out more.

Rudolf Herczog's portfolio oozes with worn-down architecture and pipes inspired by *Blade Runner* and *Aliens*. "Science fiction used to be high-tech, shiny and new," he says. "Syd brought it down to Earth and made it look aged, and I believe this part in particular has influenced a lot of artists"

© Rudolf Herczog, www.rochr.com

For Neil Maccormack, *Blade Runner* remains one of the best sci-fi films ever made. "The way that Syd visualised the book it was based on is an example of some masterful skills which portray a mood and feeling through the film; it's something I try to do in every piece I work on"

© Neil Maccormack, www.bearfootfilms.com

© Rudolf Herczog, www.rochr.com

MASTERFUL TIPS

To create successful, believable designs and compositions there are a few things Syd recommends to budding artists from his own practice

- "I read about in-progress experiments, emerging technology and enjoy wondering 'What if...?' Ideas generate almost without effort when you read about what a team is doing in the world of nanotechnology, or the amazing advances being made in medical theory and organic technology."
- "Understand and appreciate graphical composition by studying the masters. They didn't have computers and they experimented and refined the art of depicting scenario as a three-dimensional illusion on a two-dimensional surface to perfection. Any talented movie director and DP knows the rules of planar composition well, and their shots follow the same compositional rules as any two-dimensional artist."

Syd parks his Hypervan on Crimson Plaza in the first illustration of the Hypervan series, as featured on pages 148-149 of Sentury II

THE STUFF OF DREAMS

Syd believes in the importance of a graphic designer's ability to dream...

"Dreaming is brain activity in all of us when we think we're asleep," Syd explains. "The brain does not 'shut down', but continues to clear its registers, to format randomised recollection that seems to be scenario. It is possible to pre-programme your brain before you fall asleep to concentrate on a particular subject – I've done this and discovered an 'answer' that worked wonderfully when I woke up."

> "Syd has an unsurpassed eye for proportion, balance and composition – the key elements to product design, which get ignored today by an ever-growing flood of shallow CG renders"
>
> **Daniel Simon,** vehicle concept designer

LIFE-CHANGING INSPIRATION

Syd gets many unsolicited entries on his webpage from people who have literally changed their life's ambition after seeing his work. "That is the ultimate compliment and I take that accolade very seriously," Syd says. "In fact, that will become my legacy when I'm no longer here." After an incredibly busy decade – including undergoing triple bypass surgery – and at 77 years old, Syd shows no signs of stopping. Ambitious to conquer one of two design challenges that have so far eluded him, Syd explains, "One would be to be the concept designer for an immersive theme park... and the other would be to be the concept and designer-of-record for a superyacht." Having already produced master plans for three billion-dollar theme park proposals and concept designed a large cruise ship as well as numerous superyacht proposals, his extraordinary dedication to his art is a true inspiration – something we should all aspire to. "At an age when many lesser souls would have been in retirement for years, Syd Mead is obviously fuelled by a passion few have in their work," Stefan comments. And we see Syd's playful spirit living strong in his work through the showcase in his latest book *Sentury II*.

"Looking at Syd's drawings and paintings you can see that he still has the ability to dream about faraway worlds," German digital artist Till Nowak says. "He never turned into a businessman regarding his art. He is still the artist that wants to create because he wants to see."

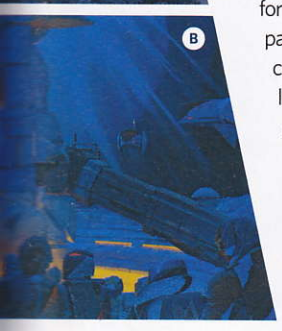
DESIGN WITHOUT LIMITS

With a client list literally like no other, Syd moves effortlessly between industries, concepting entire new worlds for film as easily as he would design a thermal flask. "It's amazing how he can use his skills without limitations and [turn them to] from automotive design to advertising, product design, film, architecture, computer games etc," Till comments. "I can learn a lot from him because he lives exactly the life of a designer as I imagine it for myself: independent and versatile." For Syd, it's this flexibility that enables him to enjoy the various fields he ventures into and the engaging professionals who make his acquaintance. "I learn new things, meet some very, very smart people and create a visibility that perpetuates itself," Syd says. "You can't beat a combination like that."

A veteran in the film industry, Syd has seen it evolve throughout his career to a point where many young designers can now work on a film at a reduced-pay basis for the credit of working 'in film'. "The first film I worked on, *Star Trek: The Motion Picture* was a creative adventure in solving, really, a camera track problem as it translated into a film sequence," Syd explains. "Subsequent work on films changed from my being involved all the way through preproduction and some postproduction work – matte shot preliminaries for *Blade Runner*, for example – to being hired to design a particular artefact or maybe several." And having just been working on Neill Blomkamp's next film, Syd is continuing to shape the worlds that artists will return to again and again as we discover our own futures. "It was an absolute delight working with him and his production designer, Philip Ivey," Syd adds. "I admire *District 9* very much and to work with the same director was a wonderful chance to keep my conceptual 'toe' in the sometimes uncertain waters of the movie industry."

Now, the world will wait in anticipation for the result of this meeting of wonderful minds. "It's exciting to hear about the connection between such a legendary designer and fresh talent of Neill Blomkamp," Till emphasises. "I can't wait to see what comes out of that!"

A



B

A This floater vehicle in the middleground is one of the epic designs from the Future Concourse section in Sentury II, pages 140-141

B As featured on pages 56-57 of Sentury II, floating rock cubes add a surrealistic element to this spectacular landscape illustration

GRAPHIC RULES

Syd believes that if you can understand the graphic rules, you can become a graphic designer

"Graphics, from time immemorial, has been the representation of some kind of recognisable visual reminder," Syd explains. "If the graphic is really weird it can demand a kind of visual 'initiation' to enjoy it. If it is commercial the graphic has to transfer meaning that is understandable across a particular demographic. The rules demand a sophisticated appreciation of appropriateness that matches the reason the graphic is produced at all. If nobody can recognise what the graphic is, you've probably wandered to the really nondescript world of contemporary 'fine art'."

Syd Mead's bold colour choices are something Stefan Morrell often takes cues from. "His concepts always have a realistic design ethic and feel like they could work in the real world," Stefan says. "I'd suggest anyone who has followed popular culture probably has some Mead influence – whether they know it or not"

A MASTER STORYTELLER

The world trusts in Syd Mead and his visions of the future. Master of the art of storytelling, he presents concepts that are rooted to the real world, making them believable and demonstrable of his perfect understanding of function and design. "I don't know if 'trust' is the right word," Syd responds humbly. "My 'future' scenarios are convincing because they illustrate familiarity coupled with a new idea. They are not 'weird' but illustratively engaging, providing the intriguing opportunity to 'peer' into an elaborately contrived yet cohesive world illusion." With a breathtaking ability to portray entire stories in single shots, he captures moments in time, offering us glimpses through mere fragments. "I create an illusion of story very deliberately," Syd says. "I design an illustration in theoretical three dimensions and then pick the best 'one shot' that complements the visual story I'm in the process of illustrating." Using recognisable scenarios and objects as the hook, our imaginations are captured; the additions of far-out elements go on to keep us spellbound by his sensibilities. We're fascinated. Engaged. We always want more.

Regardless of the format, Syd's work is centred on the mastery of storytelling. "In the 'real' world, the design task also correlates to a 'story' – the context in which the artefact will be used or the level of pretence that is being illustrated," Syd says. "In the movie world, the same range of necessities exists: ambience, scenario, costume, story world parameters. I treat both kinds of assignments exactly the same." Syd had no idea that working in the movie industry would be any different to any other creative challenge, however. "Movies are illustrated stories, although the release format can be far more elaborate than designing an illustration or even a commercial product," Syd adds. "After creating the V'Ger entity in postproduction for *Star Trek: The Motion Picture* I started on *Blade Runner* with Ridley Scott as, really, just another design job. I treated the challenge like I would any other task. Then *TRON*, a totally different design task working with Steven Lisberger at Disney. And of course *2010*, *Aliens*, *Short Circuit*, *Time Cop* and lots of others that ended up hanging on one of the dead branches of the Hollywood dream tree!"

A FUTURIST'S FUTURE

Syd is our visionary futurist whose designs from half a century ago are now taking shape in the real world. "Any really good idea will eventually come true when technology, funding and public acceptance all match," Syd says. "I thought up some pretty odd ideas 40 or 50 years ago. That they turned out to be 'good' ideas is a combination of my educated naïveté and coincidence." Whether naïveté or genius, Syd's ability to depict the future is incomparable. "We will eventually find out how everything works," Syd adds. "When that happens we then face the ultimate challenge of human intelligence. Do we become responsible users of our accomplishments, or do we continue to chase obscure, ancient superstition and create and enforce dumb reasons for even dumber rules? I hope we survive this crucial boundary into ultimate understanding."

In the last decade Syd has finished up design on the robots for *Mobile Suit Gundam: Turn A* generation – a high point for him as the new decade began. Working with the animators, Tomino-san, the story author and the design executives at Sunrise and Bandai was an exhilarating experience for Syd. At the recent end of the same decade he also provided concept and CADD direction for two new eating establishments in New York City, respectively FoodParc and Bar Basque. "Those two design projects created a wonderful bracketing of the last ten years," Syd says. "One project was character design for anime and the other was a challenging design for the 'real' world." And there is no fear of Syd stopping there. Driven by a passion for design and a thrill for life that will leave the rest of us breathlessly following behind in awe, we look to a future of broken boundaries and freshly conquered challenges. "And the best thing about Syd Mead?" Daniel Simon questions matter-of-factly. "He could keep illustrating all those seductive wonder worlds if electricity went out for the rest of the year." To that, we have no doubt.

Syd's personal design of a Mega Coach vehicle graces pages 144-145 in Sentury II *in this illustration depicting a futuristic scenario in Palm Springs*

© Stefan Morrell, http://stefan-morrell.com

SENTURY II

Syd Mead's Sentury II is the long-awaited title from Design Studio Press showcasing the imaginings of the last decade. Publisher Scott Robertson speaks of his first encounter with Syd's legendary design

"When I first saw Syd's work it had an immediate impact on me, not only for the fantastic futuristic design content within the image but the skill with which he was able to communicate these designs in futuristic scenarios," Scott explains. "I mean, he really is a master draughtsman, in addition to being a great designer. He has always provided a standard to aspire toward. Of course, he sets the bar so high that the work will be an inspiration for a long, long time. He's simply amazing when it comes to his level of consistency! His work still exemplifies all of the mastery of the media he uses when exploring new conceptual scenarios.

"The only thing that has really changed for me in viewing his work over 40 years are the subjects of the pieces, but this is nothing new; he has always explored new and exciting themes to keep the rest of us in awe. Everything he communicates through his sketches and renderings engages and rewards the viewer, connecting us fully into the experience being depicted by the work."

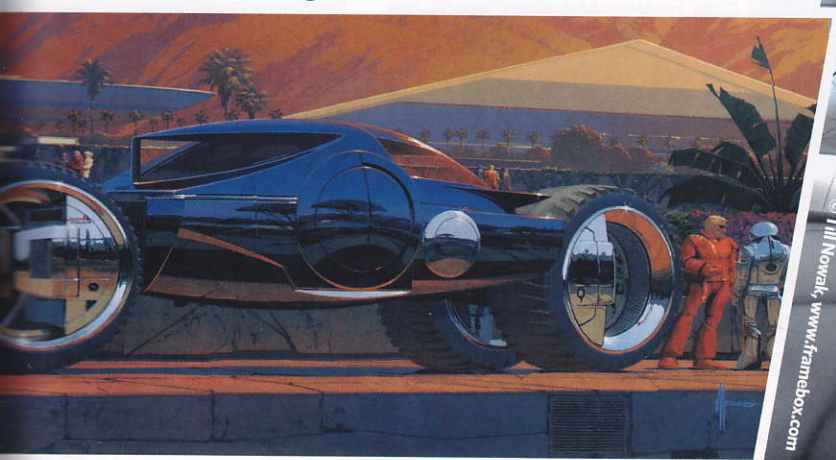
Sentury II *can be purchased in the UK through Titan Books (http://titanbooks.com) for £40 and in the USA from Design Studio Press (www.designstudiopress.com) at $50*

MEAD MAGIC

Hollywood vehicle designer for TRON: Legacy Daniel Simon reminisces how he first discovered Syd's books over a decade ago

"The unique way in which Syd Mead intersects primitive volumes like spheres, spheroids, ellipsoids, cylinders or cones and projects harmonically organised graphics on them to create objects of any kind is ridiculously magical," Daniel says. "In 1999, I found the books Oblagon and Sentinel II in a library during my first car design internship in Europe. What a shock! There was that artist who created all those divine utopias and surrealistically realistic vehicles with a functional DNA shining through every part that made me wonder why nobody else had ever designed stuff like that before! I am glad to be his friend today and listen to all his wonderful stories from his interesting life."

> "Designing is the discreet arrangement of elements, whether painting a picture... or constructing computer program code" **Syd Mead**



Syd's perfect shapes inspired Till Nowak's enthusiasm for circles. "A circle or sphere is relaxed and tense at the same time – it's a closed curve and symmetrical in every direction," Till explains. "It can create highlights in a composition of shapes and the way Syd uses them was always a key aspect to me"

© Till Nowak, www.framebox.com

Greeble City Blocks is a stunning sci-fi cityscape by Stefan Morrell. This subject matter is a speciality of this 3D artist

MAKING MO

Whether you're a full-time illustrator, a games designer or a student, there are lots of ways you can make pocket money from your 3D skills, as Poz Watson finds out

Maybe you already have a full-time job in the 3D world, perhaps you're still learning the craft, or alternatively you just don't want to turn the thing you love into the thing you depend on for money. But that doesn't mean you can't make a little cash from 3D. As long as you've got the talent, there is the site and method out there to suit you – all you have to do is find it. Basically it depends on what type of work you do, where your strengths lie and what site appeals to you. If you design objects (jewellery, toys, etc) with the real world in mind then there are sites where you can let other people buy your designs. If, however, you create wondrous sci-fi landscapes then selling prints might be your best bet, while if you create models of people or robots then simply selling them as stock may work. For Teodoru Badiu (**www.theodoru.com**), selling prints of his work is "the simplest way to reach viewers who are not familiar with my work and also to earn some money with a minimum of extra time and work investment."

> "As long as you've got the talent, there is the site and method out there to suit you – all you have to do is find it"

Greeble City Blocks © Stefan Morrell

EY FROM 3D

Photographers have long been able to make money mass-selling their work, and now the world of 3D model stock is catching up. And, considering the time it can take to create great models, it's a market with great potential, as well as a way for 3D artists around the world to help each other out. Stefan Morrell is the biggest seller of models at DAZ 3D (**www.daz3d.com**), and he explains the process behind getting your content on the site: "At DAZ you'll need to impress them before getting in, so create some good-looking promotional images and really try and sell the product to them. If it passes the initial group testing – which is purely visual – then you'll be asked to submit the content for a more rigorous testing... which will be checked for good UVs/textures and so on, basically making sure it does what it says on the box."

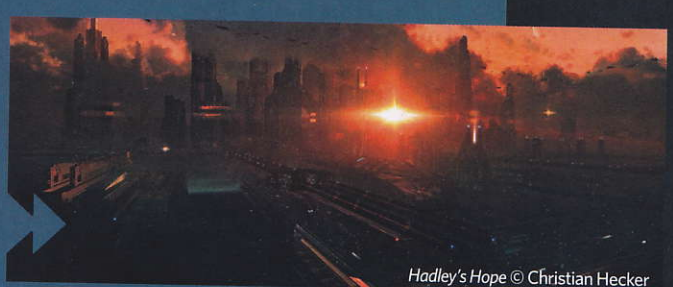
Obviously DAZ **3D** features mainly content for DAZ Studio and Poser, but there are plenty of other sites depending on your software of choice, including YURdigital, Renderosity and TurboSquid. Matt Thomas (**www.es3dstudios.com**) started selling via TurboSquid in 2002. He says that "most of my models on TurboSquid were created for freelance clients who needed a specific model but didn't need the copyright. I can give them a great price for the initial work because by retaining re-sale rights I know I can make money from the work in the future." Ziv Qual is another artist using the site. He opened his account a few years back "just to see if anything would actually sell." And sell they did. He first put on "several simple prop objects and one high-res rigged character which alone got me halfway to Diamond level by itself!"

A *Gates to Elysium* © Christian Hecker

CHRISTIAN HECKER

Having been selling prints of his work through deviantART since it first set up its Print Shop, this creator of worlds still sees each sale as a bonus

Christian Hecker creates amazingly detailed sci-fi landscapes, and he sells prints of some of them, as well as his photography, through www.deviantart.com and his own site www.tigaer-design.com. But, for him, it isn't his primary way of making money, which gives him the freedom to dabble. He says that every sold print is a "bonus" and admits that he would sell many more prints if he deliberately created what is popular. But "first of all, it's me who must be happy with the picture." And besides, Hecker says that he's sure that "exposure through art communities has got me quite a few commissioned jobs."



Hadley's Hope © Christian Hecker

> "When I make a model, I don't think if it's for selling or not; I just do it the best way I can every time. The difference is in the [post-work] after I am done with the model itself" **Martin Kostov**

A *Gates to Elysium* Hecker describes this piece, which he created in 2009, as a "personal benchmark project" on which he learnt plenty. He sold it through deviantART

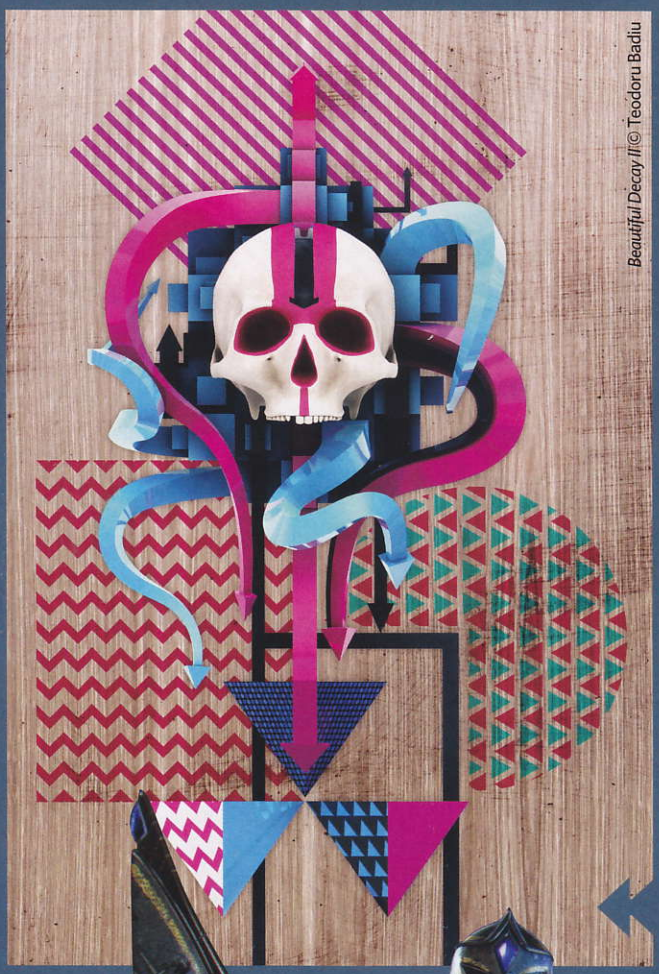
So, is there any difference between a model created for personal use and one created to sell? TurboSquid user Martin Kostov doesn't think so: "When I make a model, I don't think if it's for selling or not; I just do it the best way I can every time... The difference is in the [post-work] after I am done with the model itself. For TurboSquid I prepare special renders and put our logo in; also I export the model in different file formats and, most of the time, create a version of it in both V-Ray and mental ray." But Morrell disagrees. "You can get away with so much more when the models are only for personal use," he says. "Mistakes can easily be ignored and fixed in post. I get a lot of requests for the models I use in my own images, but many of them are so far removed from being 'finished' that often a complete rebuild would be required. A spaceship model may look great from one angle, but see the backside and it would be unfinished, with no UVs, no textures and no detailed mesh."

And if you don't like the idea of people playing around with the characters or objects you have spent hours and hours lovingly crafting, then selling your illustrations as prints might be a better option. Christian Hecker (**www.tigaer-design.com**) has been doing this through deviantART since it set up its Print Shop. He says that it's straightforward to get started: "Pretty much everything is well documented in the FAQs on the site. As far as I know you can open a basic shop/store right away. The downside is that a lot of the money that comes in goes to deviantART." The site has a basic mode that enables you to upload prints, but you cannot adjust prices without a subscription. But, Hecker warns, "You also do not get a lot of cash off of your sold prints. deviantART and other services mostly have a subscription mode where you have to pay to get their full services. Mostly you also share a certain percentage of the incoming money with the print service to cover expenses for the material and production costs."

Teodoru Badiu sells his work through **www.society6.com**, and he explains that it enables him to follow the sales so that he knows he "sells at least one item a day." Of course, prices in these cases can be pretty low – nowhere near what a commissioned illustration will make – but still Badiu says, "You can make a lot of money if your work is demanded. In my case, it isn't too much [in demand], but it's enough to help finance some of my hobbies and my magazine subscriptions and I'm happy with that."

B *City in the Sky* © Teodoru Badiu

C *Sky Cafe* © Teodoru Badiu

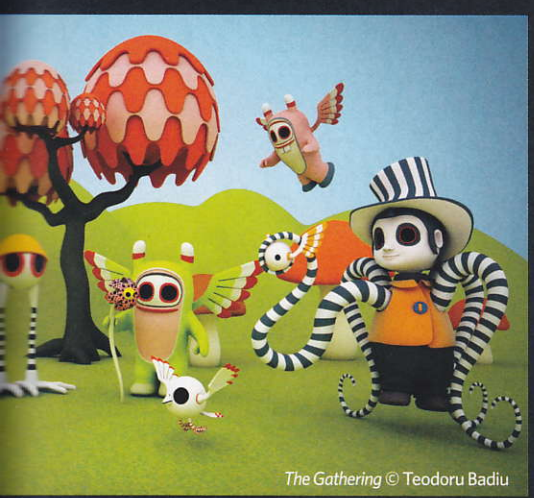


Beautiful Decay II © Teodoru Badiu

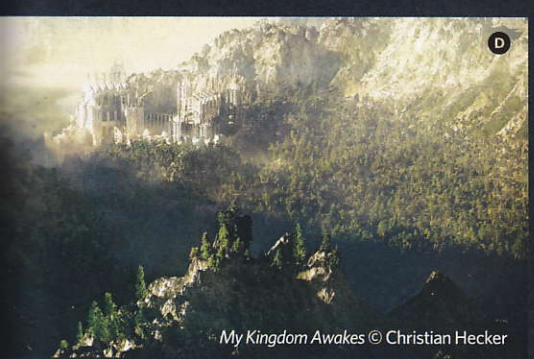
TEODORU BADIU

This freelance illustrator started off selling prints of his work online, and now he makes money from T-shirts and iPhone skins too

Teodoru Badiu – whose mixed-media and vector styles can be seen along with his 3D work at www.theodoru.com – has been showcasing his work at deviantART for ten years. At first he was just "there for exposure", but soon he started making his work available as prints. He came across more and more sites (including www.voottoo.com and www.society6.com) and began posting more of his work. He explains: "I started to create skins about a year ago... I got emails with requests to make specific work available as skins... [plus] my friends and family also wanted to have skins with my characters." Badiu notes that because much of his 3D work is character-based, it is "not too hard to create iPhone skins based on them. For the most [part], all I have to do is create a separate render with the character standing alone and that will [suffice] for skins – and also for T-shirts."



The Gathering © Teodoru Badiu



D *My Kingdom Awakes* © Christian Hecker

E *Blood Knight* © Ziv Qual

B *City in the Sky*
This piece is available as a print through Society6. It was created by Badiu in modo and Photoshop

C *Sky Cafe*
This 2009 image was created in CINEMA 4D

D *My Kingdom Awakes*
Hecker used this work to explore Vue's atmosphere capabilities and then finished the piece in Photoshop

E *Blood Knight*
Qual originally made this knight as a personal piece, using 3ds Max, before putting it up at TurboSquid

STEFAN MORRELL

From stonemason to CG artist, Morrell now makes a solid living selling his models online

Back in 2003, Stefan Morrell was a professional stonemason and a 3D hobbyist. Already active on DAZ 3D, he took on some commissions from the website's Platinum Club for small environment pieces. He says, "I enjoyed the creative work so much that I quit the day job and focused on making content [and] now it's my full-time job, though I work on my own content instead of taking DAZ commissions."

As well as now being the top seller at www.daz3d.com, Morrell is also a freelance illustrator and occasionally does contract work for videogame studios. He explains that he "was fortunate to get in early [at DAZ 3D] and build a large catalogue fast... While I often cull out older models, it remains a steady income and I can often skip months without needing to add new models, relying solely on legacy sales of older content, which allows me the time to work on personal artwork or take on other interesting freelance work."

Find out more about Morrell's work at http://stefan-morrell.com.

Streets of Asia © Stefan Morrell

City Ruins
Morrell created this image in 2010 and it's up for sale at DAZ 3D

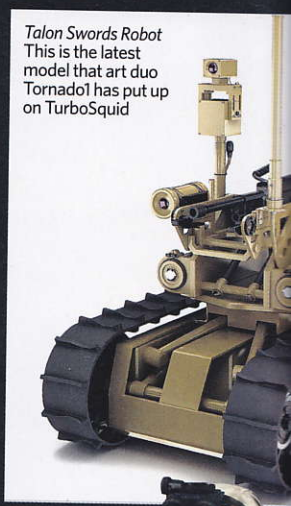
City Ruins © Stefan Morrell

> "Urban scenes and sci-fi environments are always good sellers for me and I've built a good reputation for making content in those genres"
>
> **Stefan Morrell**

Of course it doesn't have to be mammoth prints to be hung across fireplaces when you're talking about selling your illustrations. There are plenty of other places in which people like to shout their individualism. Badiu has capitalised on many of these niches, and reveals: "There are quite a few ways I try to earn some money from the work that I make. One way is by selling art prints, posters, laptop and iPhone skins or T-shirts through sites like deviantART, www.zazzle.com, Voottoo and Society6. Further, there are ongoing contests sites like the character contest that's held on www.mojizu.com, where – if you win – you can earn some money. And then there are collaboration works with sites like www.chocovenyl.co.uk, which sells wall decals."

And if you're already thinking as real world as a wall decal, why not think about bringing your vinyl toy, bracelet or candlestick designs to life? Shapeways and Sculpteo are 3D printing services, through which you can turn design into flesh (well, plastic or metal usually) for your own benefit. But you can also use their websites to set up a shop, which will enable anyone out there to order copies of your designs, even in a range of materials and finishes. Both sites offer flexibility for the prices you set and, of course, handle all the production and shipping themselves.

The problem – whichever method you choose – is that it's pretty hard to judge what will be popular. When you're an illustrator, people come to you and ask for something that looks like another image you've done, and as you work on it, back and forth contact with them makes sure you're producing exactly what the client wants. But when the client is anyone who might want your model or illustration for any purpose, how do you know what to offer? TurboSquid user Martin Kostov started out in January 2009, when he just uploaded models he had already created. This had "some results," as he puts it. "Little by little I started putting more thought into creating my models," he continues. "I did research and talked to other vendors and results started to show." But even a big seller like Morrell can't always predict what is going to be popular: "You never really know if something will sell well and be successful," Morrell explains. "Urban scenes and sci-fi environments are always good sellers for me and I've built a good reputation for making content in those genres, but recently I made a forest environment called *Enchanted Forest*, and I was pleasantly surprised at the appetite DAZ customers had for it." But assuming that your selling is just a way to earn a bit of extra cash, then you might not care if your products aren't top sellers. Hecker admits, "I don't sell too much to be honest. Every now and then a smile pops up when I see that someone bought something. I think what sells most is photography. I mean, who would put some kick-ass sci-fi picture into his/her bedroom? Most people tend to go for something [more] traditional. It's a matter of taste I guess."



Talon Swords Robot
This is the latest model that art duo Tornado1 has put up on TurboSquid

F *US Army – rigged*
This model has been on sale at TurboSquid for 12 months and has been doing good business for Matt Thomas

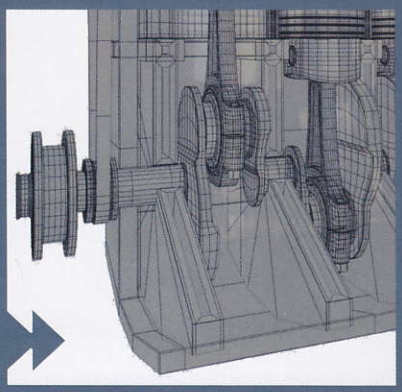
TurboSquid's technical tips

Standards to please any clients

If you're considering selling your models through a reselling site such as TurboSquid, here are a few pointers to help you find success

TIP 01 Stick to quads and triangles

Form your models with quads (four-sided polygons), with a few triangles where necessary for smooth edgeflow. Ngons (polygons with more than four sides) make it hard to detail, re-texture or subdivide a model cleanly, and can make it impossible to export it to game engines and finishing programs. A model made entirely of triangles is difficult for some industries to work with, but everybody loves quads.



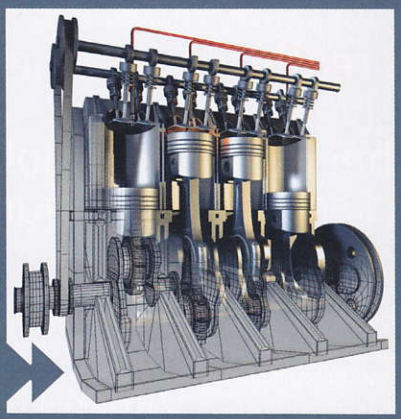
TIP 02 Use real-world scale

When a customer merges a series of objects that are all at real-world scale, the scene comes together like a dream. But if an object isn't at the right scale, the customer has to either take a wild guess at the scale or spend time making it accurate. Neither option is pleasant. It doesn't matter what scale you use – inches, feet, centimetres, metres, miles, kilometres – as long as it's real-world.

Images © TurboSquid

TIP 03 Name your objects and textures

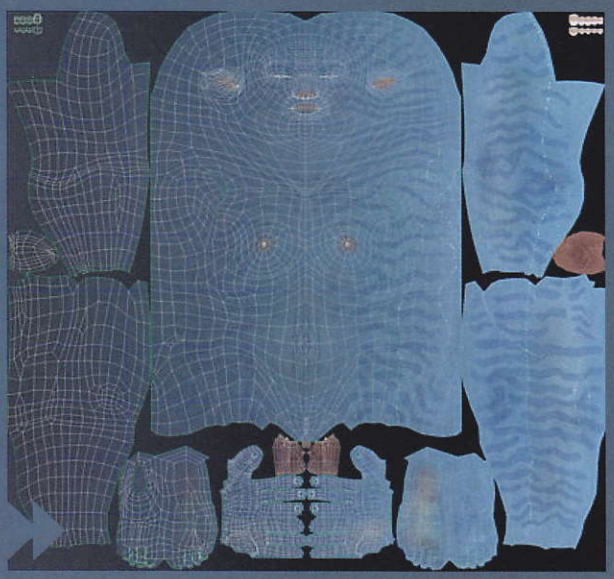
A merged sceneful of 'Box123's and 'Cylinder456's can drive a customer to tears, especially if it occurs on multiple models. Don't be that guy that makes the customer cry – take the time to name your objects descriptively. The same goes for texture files. Spend five seconds renaming 'Image003.jpg' to 'Building_Front.jpg' or 'Soldier_Boot.jpg' or whatever it actually is. You can be an even bigger hero by removing explicit texture path references and thus eliminate errors on loading.



> "Don't be that guy that makes the customer cry – take the time to name your objects descriptively"

TIP 04 Learn to unwrap

Just about every model of any complexity has some portion that needs special attention with regard to texture coordinates. Take the time to unwrap the UVs in these areas and even them out to eliminate stretching and other unsightly texture problems. Create your textures at high enough resolutions to withstand reasonable close-ups. Hide your texture seams by placing them in areas of the model that aren't likely to be seen.



TIP 05 Clean up after yourself

Depending on the modelling process you use, you might have some cleanup to do to make your model merge-ready. Take a few minutes to check for coinciding faces, which can cause flickering in animation renderings. Get rid of isolated vertices and weld coinciding vertices together. Check for missing or flipped faces. A few lights and cameras aren't a bother, but you should delete unnecessary reference or helper objects.

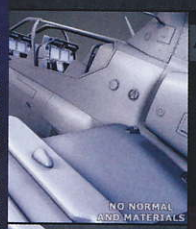
TIP 06 Centre the model

There's nothing more frustrating for a customer than not being able to find a model after merging it into the scene. If you place your model at – or near – the 0,0,0 origin it will merge at that spot, making it easy to find. In addition, you should group or link your model's pieces together in such a way that the customer can easily pick up the entire thing and move it around.

TIP 07 Workflow advice

All the things customers want in a 3D model are fairly easy to implement technically, especially if you keep them in mind all the way through your workflow. You can, for example, turn your Ngons into quads before copying the offending object a dozen times. 3D packages have tools that check for coinciding faces, remove explicit texture paths and rename objects – just to name a few. These tools are described in the TurboSquid Knowledge Base under Best Practices. While none of these workflow practices will make you a better modeller, they will ensure that a good model is considered great by the customer that pays for it.

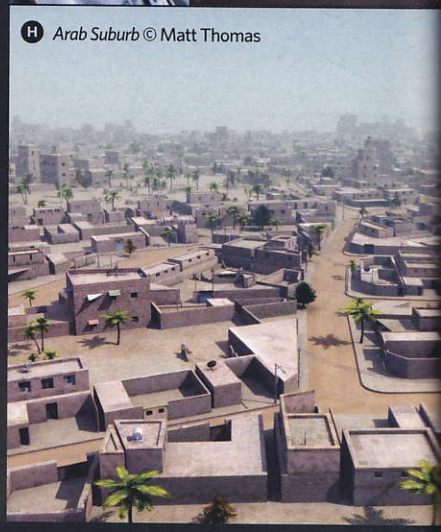
Rigged Dragon
Qual created this dragon way back in 2004; it was originally a personal piece in 3ds Max



© Tornado1 (Martin Kostov and Ivo Jovchev)

Rigged Dragon © Ziv Qual

H *Arab Suburb* © Matt Thomas



So that's the dilemma many artists face. Upload work that you love and care about putting the time into, and hope it'll be popular, or deliberately create what you think will sell. Choose the latter and you might find that to do it properly, you have to take it seriously. Kostov uploaded models to TurboSquid "as a hobby" for about five years: "My first cheque was for $7!" But in early 2009 he decided that he really wanted to try and make money from it. "I started taking it seriously and making more and more models," he tells us. "After a few months a friend of mine joined me in doing this and we have been together ever since. A year later I quit my job (at an interior design studio) so that we could work on the model collection full time and here we are now." Although he is an in-demand illustrator too, Morrell has found that selling his models can make a worthwhile income. In fact he has "content that's sold up to 5,000 copies over a lifetime of several years." But if you're only getting into the game now, getting up to that sort of level is going to take a lot of work. As Kostov sees it: "If you really want something to work, you have to give 100 per cent – and that's why I think that quitting my job was the best decision I could have made at the time."

> "If you really want something to work, you have to give 100 per cent – and that's why I think that quitting my job was the best decision I could have made at the time"
> **Martin Kostov**

"The biggest problem is popularity," explains Hecker. "There are a lot of artists out there, especially on sites like deviantART. Most of the popular artists have print accounts and do generate some nice cash. That means you have to really *be* someone. You need to have a name in the community and, more importantly, you need some real kick-ass artwork to present." He suggests that you really need to be part of the community you choose if you want to be a big seller: "Make friends. Spread the word. Keep your account busy. Do whatever possible to get your name and work known." Qual is currently in that process of turning a sideline into something more. "I've decided to really give it a go so, for a few months, I've invested all my time into transforming many of my personal portfolio projects into dozens of TS products which very quickly got me past the Diamond level status."

And if 'Diamond level status' means nothing to you, then you obviously haven't signed up for any of these online communities yet. Most of them have their own loyalty programmes, with the sellers getting more money from their sales in return for having all their content on one site. Kostov is a member of the SquidGuild: "When TS introduced its loyalty programme a year-and-a-half ago I was really excited because I wasn't making much money on the other stock sites at the time. For me, this was all good news because I'd get a raise in the percentage [of sales] basically by doing nothing." TurboSquid has just reached an agreement with **www.fallingpixel.com** and **www.exchange3d.com** too, so Guild members can actually put content on all three websites now.

So what's the next step if you decide you want to put your model or prints up for sale? Well, Morrell would advise a long hard look at "what the market doesn't have." He explains that "catering to an area that isn't filled already and creating something unique and original will get you a good name. I'd also suggest setting your quality bar higher than what you see in the Poser/DAZ stores; look at the so-called higher-end sites and use that as a bar for the quality you should aim for." Hecker adds that you shouldn't "waste too much money into subscribing to such print services if you're not sure you can compete. Take a look at featured prints, for example. If your work has the quality to compete with that, give it a try."

Ultimately, your approach to making money online will be decided by your work, as well as how much you want to make and how much time you have to commit to it. If you want to make a serious amount, expect a serious amount of time and effort (at least to begin with). If you're happy with pocket money, then go and have a dabble – you might just surprise yourself.

G *Arab Suburb*
Originally created for a freelance client with their in-house scripting, Thomas says this has been up at TurboSquid since the start of March

H *AH-1Z Viper Helicopter*
Made in 2010, this was Tornado1's first big project for TurboSquid and it was created using 3ds Max

I made this...

Incredible 3D artists take us behind their artwork

Artist info

Billy Bogiatzoglou
3DArtistonline

Website www.behance.net/billelis
Country UK
Software used CINEMA 4D

> For the lighting I created my own HDRI map using a baked texture from a chrome sphere that was surrounded by high-luminance lights – both warm and cold lights. I then created a studio environment to place my design in

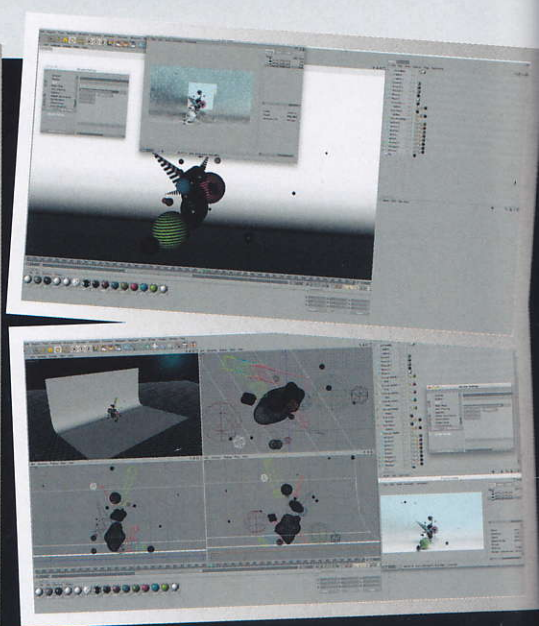
> I wanted the explosion of playfulness and creativity blended with knowledge to help form the structure of the piece

Software used in this piece

CINEMA 4D

ABC 2011

This image was inspired by my childhood. I was working with Metaballs at the time for my final-year project and I started thinking back to when I was young at kindergarten. It was a fun and exciting time, learning the alphabet, playing with Lego, Plasticine and toys like that. I wanted to capture the essence of this and combine it with my love of graffiti and typography.



Coasting to visualisation success

> We maintained a minimal colour palette so the image adopted a certain graphic quality

Alan Sanders of Sanders Shiers on creating imagery for Norway's National Library competition

Duncan Evans talks to Alan Sanders about running an architectural-visualisation company on the Cornish coast

Cornwall isn't, perhaps, the most obvious place to start a new architectural-visualisation company, but that's exactly what Alan Sanders decided to do in the summer of 2003. The ethos of Sanders Shiers was simple. To create immersive artwork to captivate and inspire, and what better place to do it than one of the most beautiful and creative-driven areas of the UK. Sanders Shiers specialises in creating visualisations for the architectural and product industries. With varied backgrounds in architecture, design, photography and illustration the company has a team that draws from a well-rounded skillset and understanding of client requirements. Currently there are five artists employed directly, but Sanders Shiers is on the lookout for additional talent to join the expanding team, so if you fancy life on the south-west coast, read on.

3D Artist: *You've got quite a large output for a small company. Do you outsource any of your work or bring in other professionals in related fields?*
Alan Sanders: All artwork is created in house, although we do pull in freelancers to assist with modelling when workflow is heavy. We also have a number of photographers we regularly use, particularly for projects in and around London.

3DA: *You are based in Falmouth, Cornwall. Do you find that modern technology has made the world a smaller place, or can it be difficult if clients want to meet face to face?*
AS: Unlike many of our competitors, we are not based in a city centre – because we don't need to be. Most projects are carried out via email/internet communication enabling us to work with clients all over the globe. When we do meet clients face to face it's simply a case of hopping on a plane/train.

3DA: *What's the advantage of working somewhere like Cornwall?*
AS: Cornwall is stunning! It's synonymous with art and creativity, providing a truly inspiring place to work. We have a selection of beaches literally ten minutes' walk from our new waterside studio which overlooks Falmouth Harbour. We feel privileged to be surrounded by a vast, stunning coastline, offering unrivalled watersports. In the summer we often head out after work to surf – a great way to relieve office tension! Falmouth also boasts one of the best art colleges in the world, producing fantastic talent. There is a real creative vibe here which is hard to avoid.

3DA: *Where is most of your clientele based? Do overseas clients tend to have different demands or styles of architecture to ones based in the UK?*
AS: We currently work with clients from all over the world including America, Norway, Croatia and the Middle East. In particular we have built a good reputation with numerous Scandinavian clients. These projects are fantastic to work on as they are constantly striving to innovate and [so] encourage us to experiment with new ways of illustrating.

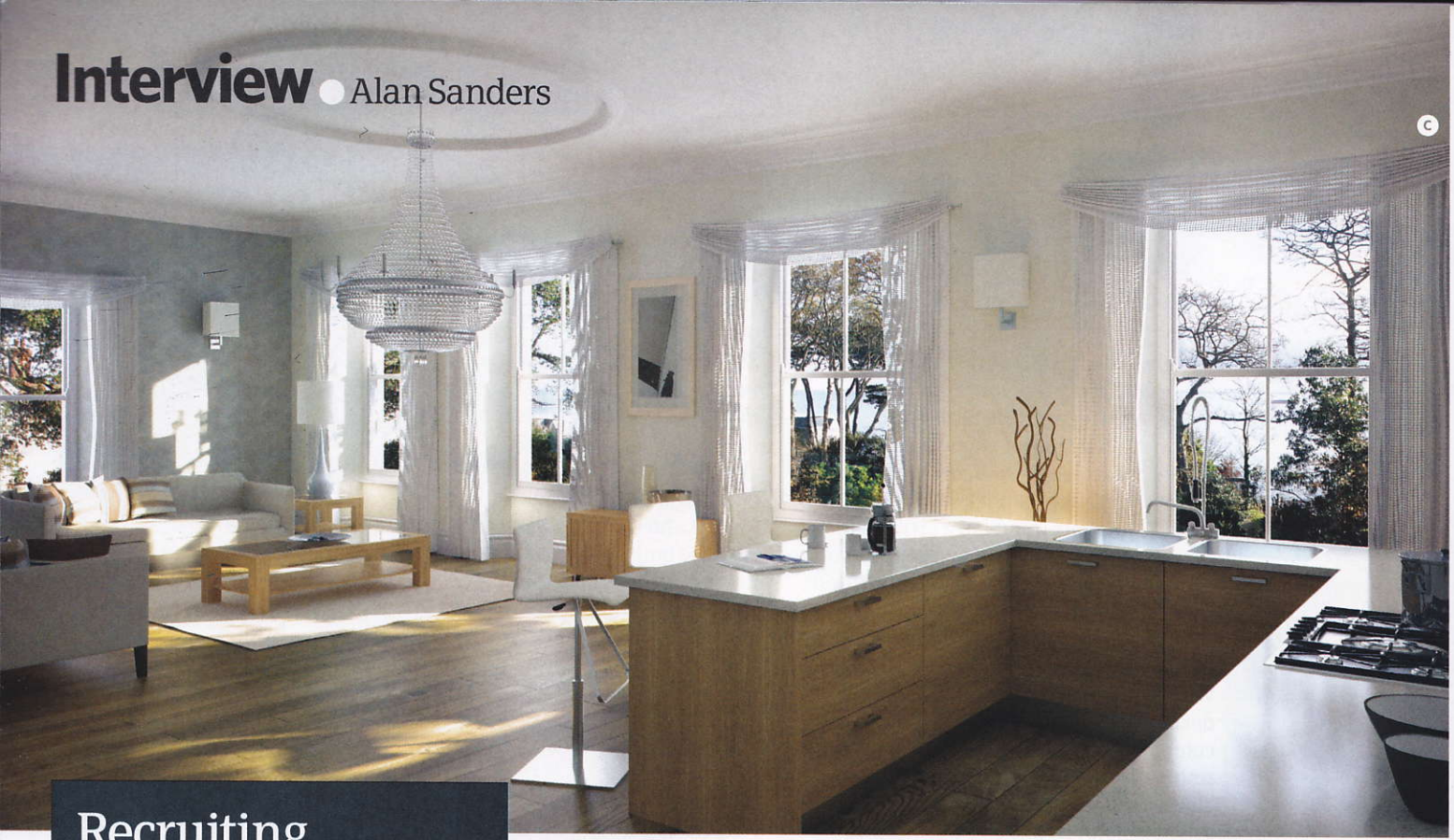
3DA: *What kind of hardware setup do you have for designing and rendering final images and animations?*
AS: We use fairly typical workstations paired with fantastic colour-calibrated NEC monitors. The colour accuracy on these units is superb. We have our own render farm, which we then use to test lighting solutions and render out high-resolution artwork and animations. A lot of the postproduction is done in Photoshop using a tablet and stylus. At the end of the day these are only artist 'tools' however, and we firmly believe there is no substitute for raw artistic ability.

Name
Alan Sanders
(of Sanders Shiers)
Company website
www.sanders-shiers.co.uk
Location Cornwall, UK
Software 3ds Max, V-Ray, Photoshop

Ⓐ Residential project featured on *Grand Designs* by Linea Studio

Ⓑ A coastal development project by Acorn

All images © Sanders Shiers



Recruiting new artists

3DA: *What kind of skills, backgrounds and sensibilities are you looking for when you take on staff?*
AS: **Creativity and artistic flair is paramount. Artists work on all aspects of image creation, from modelling through to postproduction. Background/ experience in architecture or design is also very beneficial as it teaches the importance of aesthetic harmony.**

3DA: *What type of courses or types of training would you recommend for anyone looking to get a good grounding in architectural visualisation?*
AS: **There are a multitude of 3D courses available which teach the fundamentals. I know Escape Studios runs some very good courses. If the opportunity is available, work experience and placements are also a fantastic means to learning first hand about the industry. Working on live projects with live deadlines really accelerates personal development.**

3DA: *When it comes to putting together a showreel of work, what kind of things should a student concentrate on?*
AS: **A good understanding of photography and photographic techniques is favourable. Examples should demonstrate well-balanced colour, tone and composition. We receive a lot of average portfolios with plastic-looking bedroom renders and whitewashed villas; work that is innovative and fresh will always stand out.**

3DA: *What 3D design, rendering and 2D postproduction software do you use?*
AS: All our images and animations are created using [a combination of] 3ds Max, V-Ray and Photoshop.

3DA: *What kind of clients do you predominantly work with?*
AS: Our clients are fairly evenly split between architects and developers. Though recently we have gradually started building up a good repertoire with advertising agencies too.

3DA: *Have you won or been nominated for any awards?*
AS: In 2009 we picked up an industry award for CGarchitect's Best Exterior. We have some artwork published in *ispirato: Volume 1* – a publication by American company 3DATS featuring 'a collection of fine visualisation artists of the world'. Also, the Philips mouse ad received a Commendation at the Creative Circle Awards for Best Magazine Advertisement.

3DA: *Given that the country is in the grip of the most severe cutbacks ever seen, are you seeing any knock-on effect in the visualisation market?*
AS: The industry has become very competitive [in terms of] pricing. We have stuck to our guns, however, maintaining pursuit of quality over quantity. Being a small studio with an international client base, it has enabled us to stay flexible and to weather the storm.

3DA: *As a company, what does Sanders Shiers have to offer that makes you stand out to clients?*
AS: We all share a passion for image creation and hopefully this comes across in the work. Attention to detail is very important; we try to give each image its own distinct narrative. Images need to tell a story, otherwise they are merely snapshots. We approach each image as if it were a film set, establishing a clear art direction from the [word go].

3DA: *A lot of your images feature very dramatic or stylised lighting. Is this simply what the clients are asking for, or is it a deliberate style to make the visualisation more aesthetically appealing?*
AS: Each project is tailored to the client's needs. For example a property developer may want a soft and inviting perspective, whereas artwork for an architectural competition is often very dramatic – more about drama and celebration. It's this mix that keeps the work exciting.

3DA: *On the design front, do you create all your own interior furniture and accessories or use premade ones?*
AS: Most of the time we model from scratch, adding to our already extensive library. We find the vast majority of projects tend to require bespoke furniture and fixtures. We also make a lot of our own textures.

3DA: *Do you stick to tried-and-trusted materials or does everything receive a completely fresh approach?*
AS: Not really; we work on so many varying designs and each requires a unique approach. A lot of the Scandinavian projects tend to push the boat out a bit more in terms of using a bolder colour/texture palette and more risqué furniture.

D

E

F

> Being a small studio with an international client base, it has enabled us to stay flexible and to weather the storm

C An apartment by Falmouth estate agency Heather & Lay

D This is an educational facility by Fraser Brown MacKenna architects

E Creekside development by South West Peninsular Properties

F Residential development near Canary Wharf designed by Studio RHE

Most unusual project

Aside from the gorgeous architecture work that Sanders Shiers produces, the company was also hired to create something a little out of its regular comfort zone for a prestigious advertising agency. Alan Sanders explains all about it...

Our most unusual project was when we were approached by leading advertising agency DDB to produce the artwork for its new Philips advertisement. The brief was simple: illustrate a mouse sucked to the floorboards by Philips' new vacuum cleaner with incredible suction. Working closely with the art directors at DDB, we were given a lot of creative freedom. We initially created hand-drawn storyboards that conveyed camera and compositional options. These were accompanied by moodboards that identified various elements that could be used to create the scene.

We commenced by establishing the contextual setting, experimenting with various camera angles and scene elements. Ultimately this was simplified however, resulting in an image with a cleaner aesthetic that conveyed the advertisement message more effectively. As with creating architectural visualisations, lighting and composition were key factors in setting the appropriate mood. We really wanted the viewer to feel immersed in the environment – in this case, the dusty environment under household floorboards. This low-level camera angle gives the vacuum cleaner a menacing presence; the fact you can only see the vacuum cleaner's shadow is a really nice touch, using the power of suggestion.

The actual image is a combination of 3D and postproduction. We initially set the scene up in 3D to roughly achieve the base composition and light. This was really only to serve as a guide. The mouse was crudely modelled then refined from approximately ten different mice and carefully rebuilt using various photographic elements for reference such as fur, limbs, facial features, etc. DDB was clear that the image needed to have a level of realism without looking too 'cartoony'. Emulating an underfloor cavity was fun. The environment was given a dusty feel by adding shafts of light penetrating through the floorboards; the image in general has a fairly dark vignette so that the mouse stands out. We introduced movement to simulate the vacuum suction by sweeping the mouse's fur and whiskers backwards.

The advert was entered by DDB into Cannes Lions International Advertising Festival and went on to receive a Commendation at the Creative Circle Awards for Best Magazine Advertisement. We have since worked on a small number of creative advertising projects, which we have found ultimately share the same techniques and skills used when creating architectural work. We are keen to pursue this work further.

Residential extension by Spratley Studios

Project focus: Norway's National Library

Sanders Shiers was invited to collaborate on a visualisation for a competition entry design to create a new National Library in Norway

We were lucky to be invited by Lund Hagem Arkitekter in Oslo to create a visualisation for Norway's new National Library competition. Numerous architects from around Europe entered the contest which Lund Hagem went on to win! It was a privilege to assist with such a prestigious project. The image has since been used extensively to generate publicity and revenue in Norway. Our challenge was to create a visualisation that captured the essence of the design and foreground piazza. The site is positioned directly opposite the new acclaimed Oslo Opera House so there was already a lot of interest in this area.

Lund Hagem wanted to convey a feeling of celebration and activity, ultimately appealing to a broad audience of varying ages. We opted for a weekend summer evening context, with people out and about milling around and plenty of hustle and bustle. We maintained a minimal colour palette so the image adopted a certain graphic quality. In order to focus on the proposed design, we also softened the background and surrounding context so that it became more suggestive; this draws the eye into the image components that matter.

As with many architectural competitions it's more important to communicate the core design concept rather than produce a [perfectly] polished render depicting specific materials and finishes. Often the materials and design haven't been finalised at this stage so the architect doesn't want everything set in stone. The design is naturally evolved and refined when it becomes live, [as well as] governed by budget constraints.

We find architects are continually striving for imagery that bridges the gap between raw conventional art and modern CGI, particularly where competition work is concerned. There is a need to convey personality and expression in the artwork; naturally this provides an exciting challenge as the artistic possibilities are limitless!

G Bigbury Gap. Residential development by Hawkes Architecture

H This is an American residential development by Turkel Design

I This is the inner atrium of the Sanders Shiers studio in Falmouth

This is a poster artwork for an upcoming animation

> The majority of 3D people used in arch-vis scenes make me wince; they never seem to have the subtle nuances [of] real people

3DA: *How much creative freedom do you generally have when creating interiors, or is it all down to detailed briefs?*
AS: We generally have a fair amount of creative freedom and control in terms of furnishing and scene setup. The client may simply request a 'contemporary' look [with regard to fixtures and fittings], for example. We find that our mixed design backgrounds really assist in these circumstances.

3DA: *No one designs in a vacuum – so where do you get your inspiration from, aside from the natural environment?*
AS: We subscribe to a number of design and architectural magazines which are a great source of inspiration. Not to mention architectural publications which are constantly being added to our library. These are also a great resource for studying skills like composition, texture and light.

At Sanders Shiers, we are [continually] striving to innovate and push the medium however, so we're always on the lookout for new ideas and solutions.

3DA: *You have completed some projects based in Norway. Were there any special considerations paid to the climate when visualising them?*
AS: You have to think carefully about context when creating any architectural images. It's also important to consider the cultural implications in terms of fashion, people and furniture too. Norway is quite unusual in that you have to bear in mind the lighting conditions – ie in the winter, it barely gets light, and vice versa for the summer months.

3DA: *What was the Winter Outpost for Lund Hagem all about?*
AS: This was a design proposal for a northern Norwegian military outpost. The site/details are confidential, I'm afraid!

3DA: *In general terms of design, how does your approach to commercial property visualisation differ from that of residential?*
AS: Commercial visualisation tends to be more about hustle and bustle; clients like to indicate activity which translates into revenue. Residential is more intimate, depicting a much calmer environment. I think many people like to retreat to their own 'sanctuary'. Appropriate lighting and mood can naturally reflect this.

3DA: *In your portfolio, there's a design for Blackburn Rovers. What was that all about, and was it before or after the recent takeover of the club?*
AS: This image was created for a local interior design practice. The design was for the club's corporate lounge before the recent takeover. No doubt it will now require a new makeover...

3DA: *How much retouching work do you put into the final renders? Some companies just use what comes out of the tin, but it can look a little flat...*
AS: Nearly all projects we undertake involve a fair amount of retouching; we find this enables us to feed a bit of 'grit' into the artwork. Sometimes pure CG can look sterile. Retouching and postproduction work allows us to add greater depth and detail. The majority of 3D people used in architectural scenes make me wince; they never seem to have the subtle nuances captured when using real people.

I made this...

Incredible 3D artists take us behind their artwork

Artist info

Piotr Kosinski
3DArtistonline

Website www.pk3d.com
Country Poland
Software used 3ds Max, V-Ray, Photoshop

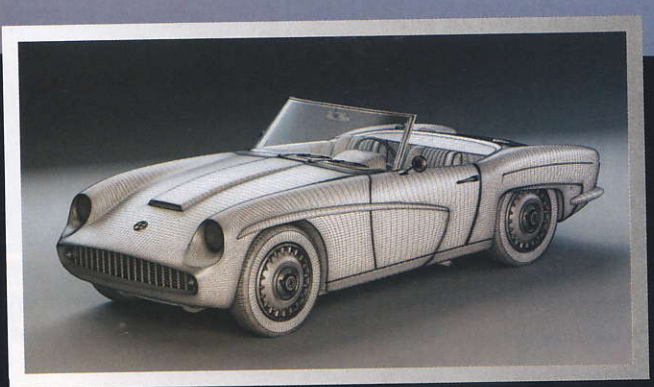
"These renders were lit with only one softbox above the car, which gives that classic studio feeling and underlines the shapes in a very simple way"

"Tyres are always a difficult part. I prepared three maps for glossiness, reflections and bump, and the final contrast was achieved in postproduction. Don't be afraid to go outside and shoot some tyres as reference!"

Syrena Sport 2011

Syrena Sport is a concept car from 1960 that never went into serial production. What's more, its only prototype was destroyed in the early Seventies. Together with ad photographer Tomek Albin, I decided to rebuild this beautiful concept car...

The base model is a simple poly model with the MeshSmooth modifier set to 1-2 iterations. The final door/hood/headlight cuts were done over that modifier to maintain the smooth surface



> I always try to rebuild models as closely as possible – I believe 50 per cent of the final image's realism is in the geometry itself

Software used in this piece

3ds Max · V-Ray · Photoshop

> I rendered the model and shadows separately, using the Dodge and Burn tools in Photoshop to create some subtle gradients in the background

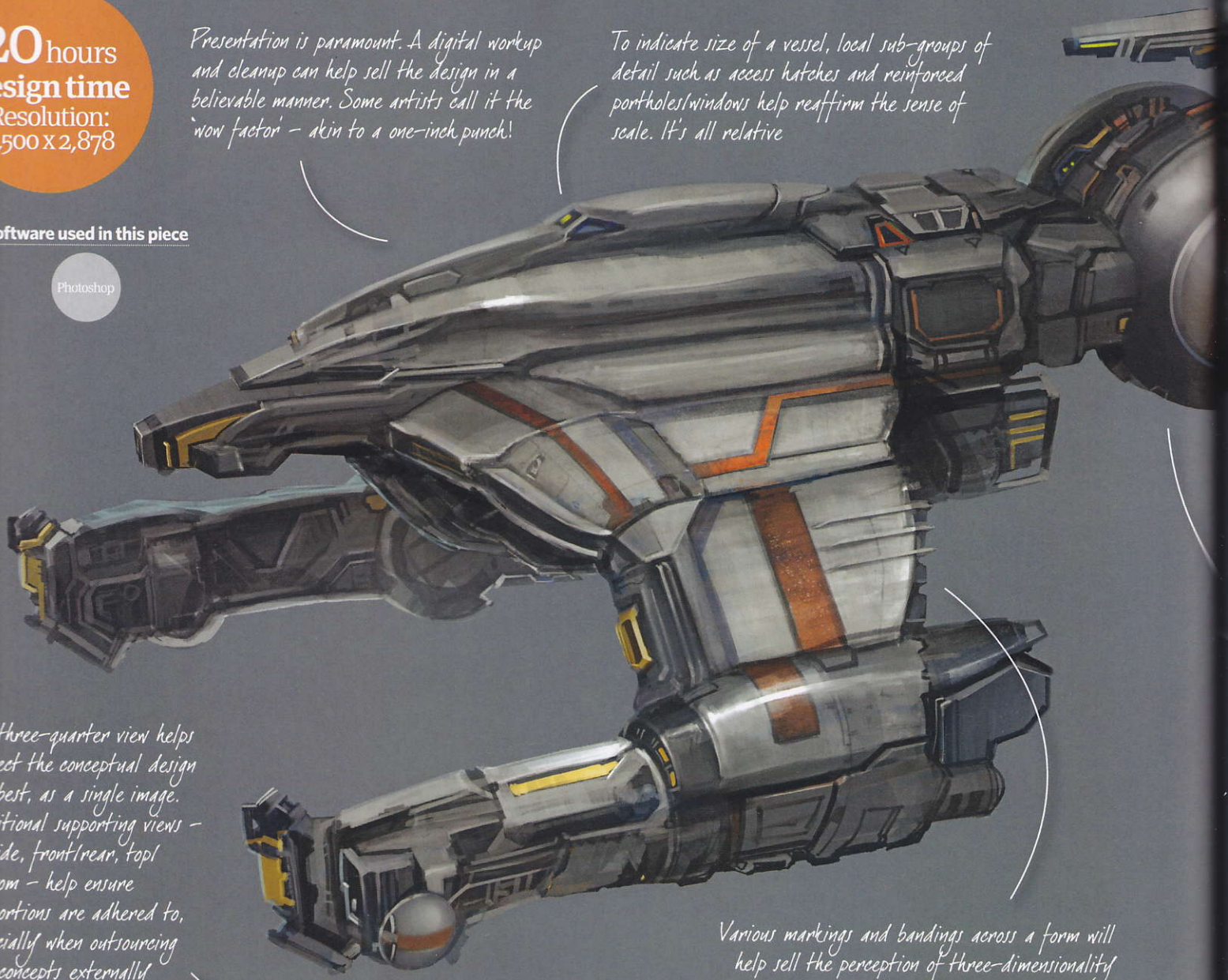
Using archival photos and blueprints to reproduce the car in 3D, Piotr modelled and prepared the scene in 3ds Max, rendering in V-Ray. All the postproduction was then done by Tomek Albin and Kacper Spala

Photographer: Tomek Albin, www.tomekalbin.com

20 hours design time
Resolution: 4,500 x 2,878

Software used in this piece

Photoshop


Presentation is paramount. A digital workup and cleanup can help sell the design in a believable manner. Some artists call it the 'wow factor' – akin to a one-inch punch!
To indicate size of a vessel, local sub-groups of detail such as access hatches and reinforced portholes/windows help reaffirm the sense of scale. It's all relative
The three-quarter view helps project the conceptual design the best, as a single image. Additional supporting views – eg side, front/rear, top/bottom – help ensure proportions are adhered to, especially when outsourcing art concepts externally
Various markings and bandings across a form will help sell the perception of three-dimensionality while using flat values and linework alone

Scorpion spacecraft concept design

Scorpio Corvette MX-55 2011

How a unique 2D design for a space-exploration vehicle took shape through its various stages of production

Chee Ming Wong is an artist within the entertainment industry

Concept

A mixture of applied biology, aeronautics and futuristic next-generation materials and technology is researched prior to the start of ideation. This helps provide an informed, functional approach within the construction of sketches and ideas.

Large-to-small shapes counterpoised with positive and negative space will help breathe the necessary harmony of aesthetically pleasing design versus over-detailed design

Tonal variation and contrast help reflect the structural and surface textural materials. This is supported by additional 1–2 colour variations

Within this workshop I would like to share a brief snapshot of the everyday processes used to produce a solid concept for the entertainment industry. This will involve a problem-solving and troubleshooting methodology that may explain why certain choices are made or avoided to steer towards the generation of a single design. The process of ideation is very much a mental process, expressed in your medium of choice; a mixed media of basic pen and paper and digital application are used here.

In this instance, we are mashing the idea of a scorpion and a ten-man crew spaceship as an animal-inspired design. The applications of this type of approach are not new and can be seen in everyday architectural and structural inventions, eg robotics, miniature drones and spy planes, applied bat sonar, gecko-like suction, enamel-inspired ceramics and aerospace materials – and so forth.

01 Applied biology ideation

This initial exercise involves a literal abstraction of the *Scorpiones* group – in this instance a mechanised abstraction of the modern and fossil ancestor of the scorpion is explored. Subsequently, the idea of integrated plates of space-age chitin – to represent external surface materials – coupled with concealed elements that can extend/recess as required form the basis of the art direction Ⓐ.

02 Ideation – lots of it!

Detailed sketches of fixed wing – forward claw-like extensions – versus extended tail end – as an observation deck/ventral fire control system – designs are explored. Placement of various attachments, both ventrally and dorsally, provides the impetus to rationalise their function in deep space and atmospheric conditions. The need for landing gears or movable stub wings is a prime consideration here Ⓑ.

03 Everything until now has been a warm-up!

A combination of all the exploratory sketches provides a rich reference point with which to finally begin the design. It starts with groups of shapes via markers. These allow for happy accidents to evolve the design – much like looking at cloud shapes – coupled with an innate knowledge of the previous sketches. Once the main groups and key lines are etched in, a supporting sub-group of reinforcing lines completes the concept design Ⓒ.

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

Chee Ming Wong

3DArtistonline

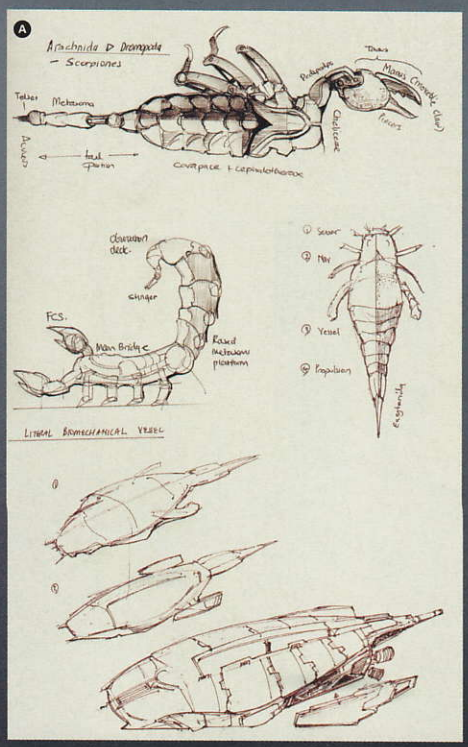
Personal portfolio site
http://koshime.com

Country UK

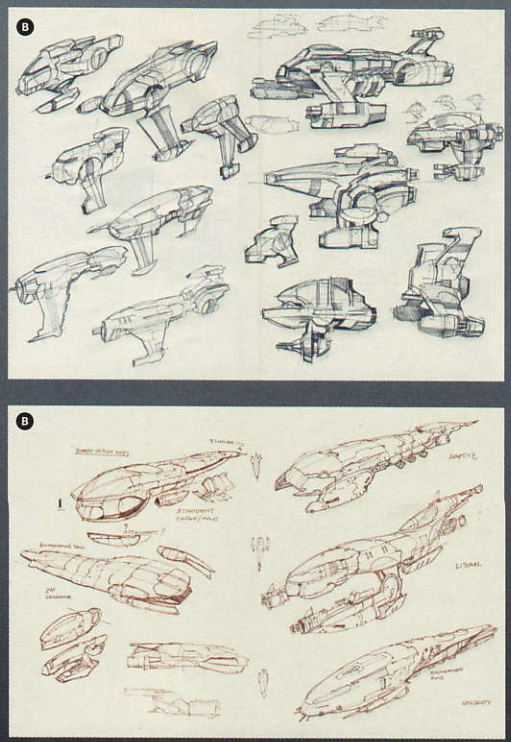
Tools used
Pens (ballpoint, Pilot G-Tec C4 0.4 Brown & Black, G2 0.7), generic marker pens (Prismacolor, Letraset, Copic), marker paper, Daler Rowney 85gsm acid-free ivory cartridge paper

Software used
Photoshop

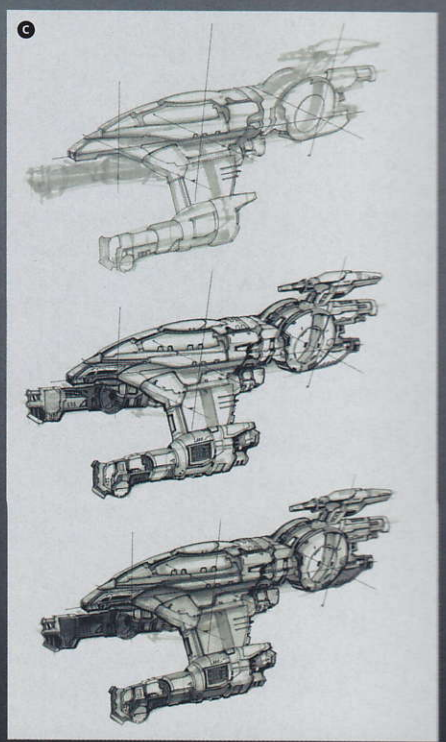
Expertise Chee is an environment and transport specialist within contemporary, steampunk and sci-fi genres



Ⓐ Key features to abstract for an animal-inspired spaceship are the pincers, carapace and stinger



Ⓑ Explore combinations of the key abstractions within a streamline or industrial sci-fi context



Ⓒ Marker explorations and digital workup can help sell the design in a more believable manner

behind the scenes

3D artists explain the techniques behind their amazing artwork

Modelling the Scorpio

Scorpio Corvette MX-55 2011

Artist info

Wiktor Öhman

3DArtistonline

Personal portfolio site
http://wiktorohman.artworkfolio.com

Country Sweden

Software used
Maya 2011, Photoshop

Expertise Wiktor specialises in working with environments and hard-surface modelling, but is also keen on branching out into concept art and character design

Part one of this two-part tutorial takes you through the modelling of the Scorpio, aiming for an illustrative finish

Wiktor Öhman is a 3D artist based in Malmö, Sweden

In this tutorial I will show you how to tackle some of the more complex shapes of this spaceship by following Chee's concept (see pages 50-51), using Maya for modelling and Photoshop for final compositing.

I modelled this ship mainly with the help of Maya's Smoothing Preview function, which is a great help when working with high-poly models. We'll also cover a nifty tool called the Lattice deformer, which – in my opinion – is one of the greatest features when it comes to Maya modelling.

Chee is a fantastic artist and his concept really was a breeze to work with for the most part, but since I was only provided with a three-quarter view of the ship, I'll reveal my process when I had to freestyle, or interpret, some of the vaguer areas, which can prove troublesome.

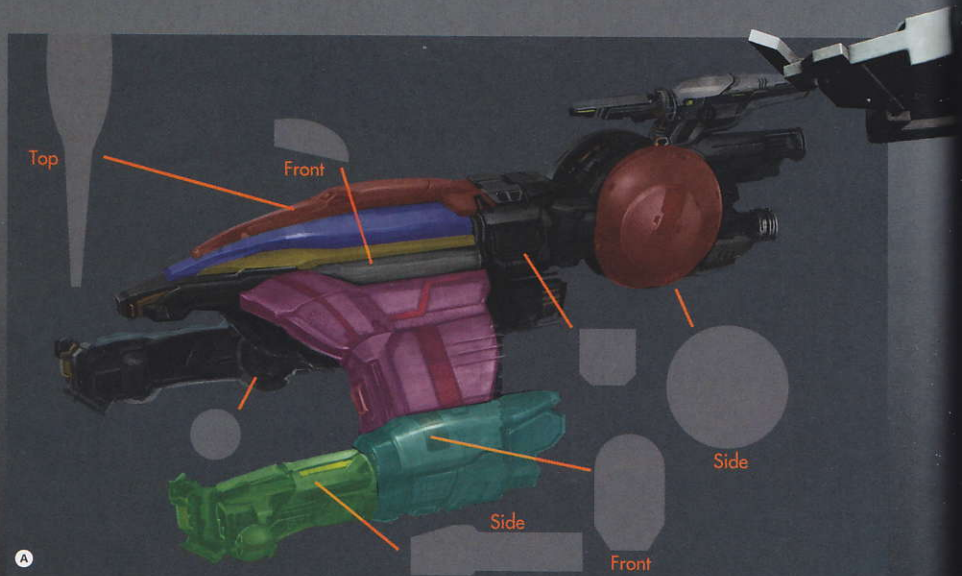
As is often the case in this kind of project, there were also a few areas that didn't translate very well into 3D that had to be rejigged, but I'll discuss these in more depth later. Now, on to the modelling!

Read the concept

Blocking out the 2D sketch

01 Analyse the concept art

First of all we need to analyse the concept art in order for us to be able to plan ahead. A good thing to do when studying concept art is to break as much as possible up into basic geometric shapes, such as cubes, circles and triangles; it also helps to divide the whole model into different segments. I, personally, tend to stare myself blind at the overall picture, making it hard for me to see the various areas. What I do to try to avoid this, plus the subsequent panicking over the level of detail, is to bring the concept into Photoshop to colour code the different areas, which enables me to see them much more clearly Ⓐ.



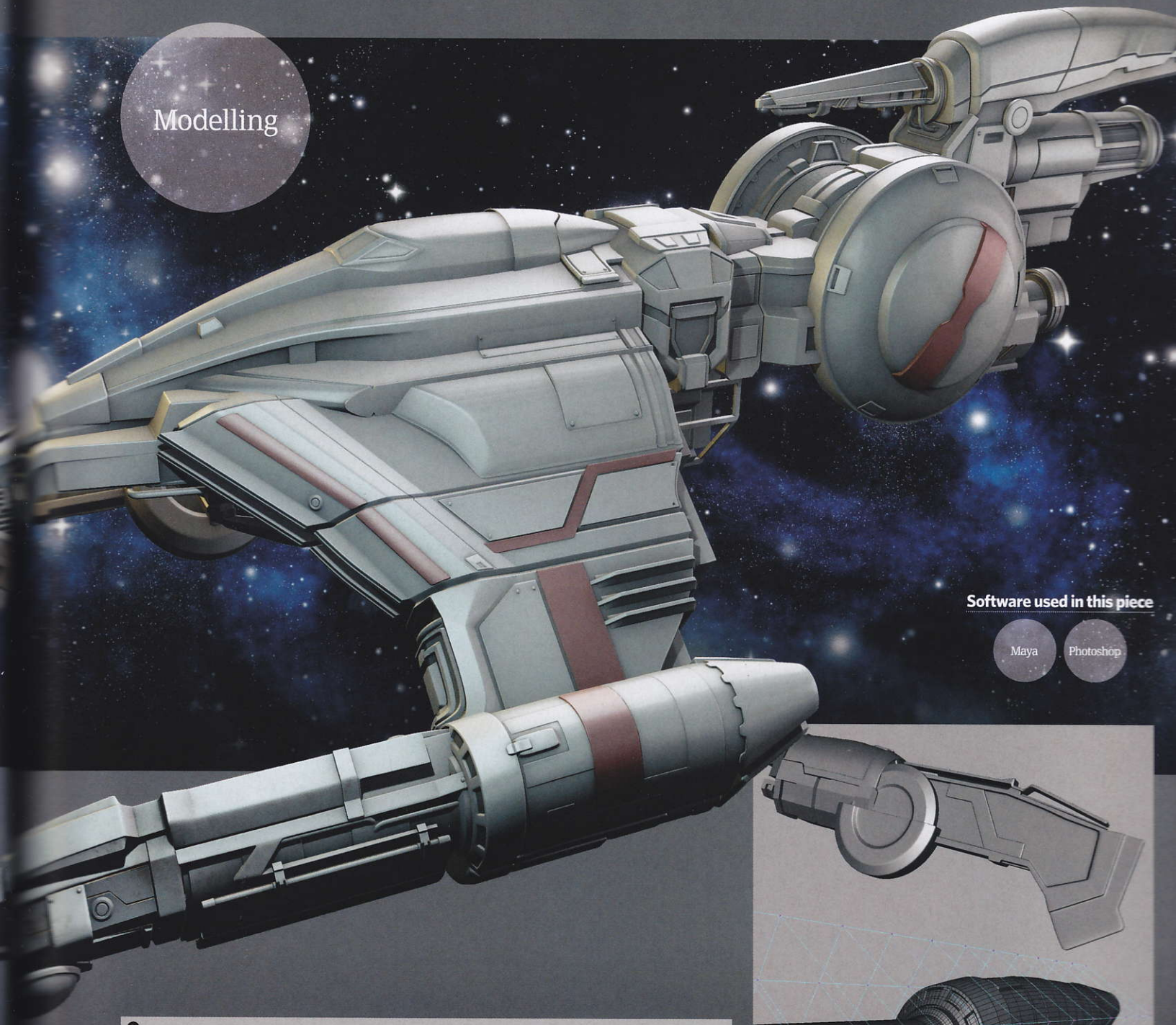
Ⓐ

A good thing to do when studying concept art is to break as much as possible up into basic geometric shapes; it also helps to divide the whole model into different segments

02 Block out the rough shapes

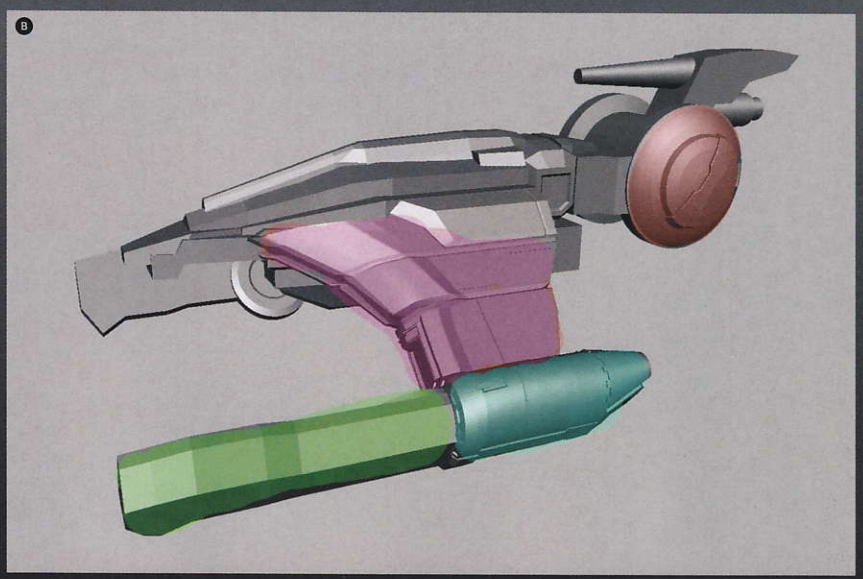
By following the colour coding and geometrical shapes painted in the previous step, I started making a rough blockout. Again, I try to use as many basic shapes as possible whenever I can. When I modelled the blockout, I made the mistake of adding way too much detail, which I came to regret later – so be wary of this. The purpose of making blockouts is to get a feel of the shapes, the 3D silhouette and the general proportions. The reason I regretted adding too much detail in the blockout stage was because I made the next steps harder for myself, as it's more tricky to change high-poly meshes than it is low-poly meshes and the details I added prevented me from seeing the fundamental form. Later on I had to go back and remake many areas as a result Ⓑ.

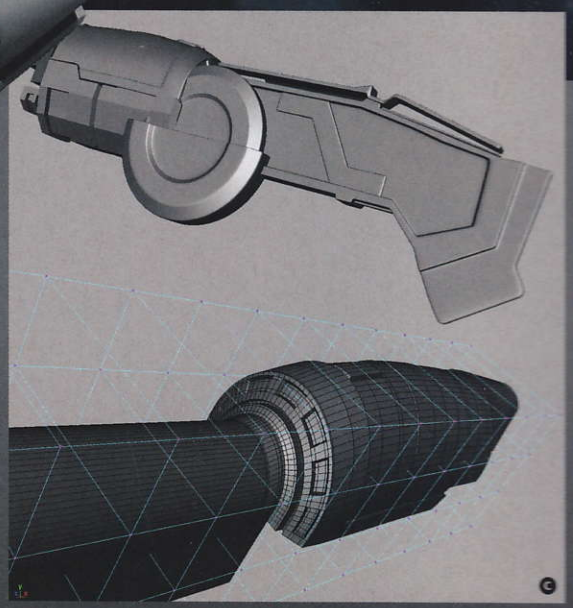
Modelling



Software used in this piece

Maya Photoshop





03 Refine the shapes

Once you're happy with the blockout and you've made sure the proportions look okay, it's time to move on to refining shapes. The colour coding becomes really helpful here, since it allows me to focus on one segment at a time. If I don't split the work up, I tend to go all over the place and add details everywhere, not really finishing anything. I decided to focus on the wing extensions first. I started modelling from a highly tessellated cylinder and worked from there. Once satisfied with the basic shape, I added a Lattice deformer (Animate> Create Deformers>Lattice), enabling me to easily add some slight curvature to the cylinder C.

Further refining

How to tackle the problem of pinching

04 Fill in the blanks

I was only provided with a three-quarter view of the ship, which means there were areas that weren't shown. As a result, I had to use my imagination to fill in some of the blanks. This is not always an easy task, and it means you really have to breathe in the feeling and design of the concept, to avoid having the freestyled parts pop out too much. The belly of the fuselage isn't really shown in the concept, so I decided to add some sort of sensor contraption. I blocked out a rough shape that I felt followed the general flow of the design D.

05 Planes and wings

To model the wings I first started out by modelling the front part of them, which is sort of curved. I kicked off with a plane and extruded from the top of the wing to the bottom, where it meets the extension. One region that you should really watch out for is the area I've marked red in the screengrab; having proper topology here is essential. Once the shape is done, grab the edge marked with red and extrude outwards. Make sure it lines up with the general shape of the ship. The back of the wings isn't shown at all in the concept, so I simply made a space there that I could fill with various engine elements E.

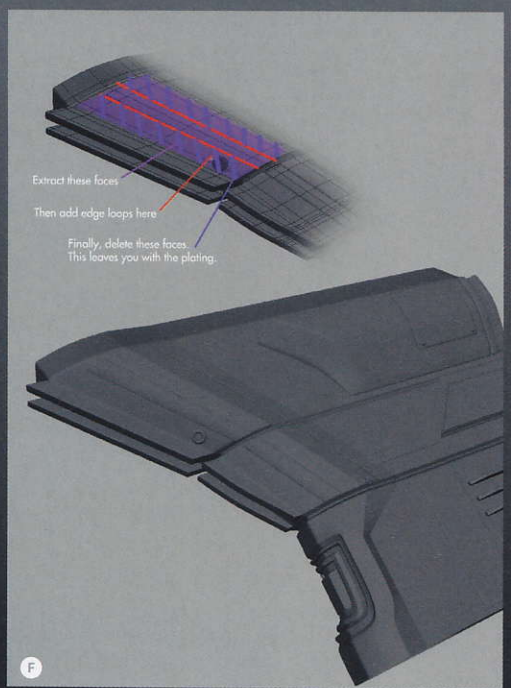
06 Wing panels

When adding panels and plating to a model, I have a trick that usually works really well: I duplicate the object that I want to add plating to, and then select appropriate faces that I want to use as plating. Next I press Shift and select the entire object, leaving me with everything selected except for the faces that I will use. After that I hit Delete and now I can tweak those faces to my heart's content and then extrude F.

D

> I was only provided with a three-quarter view of the ship, which means there were areas that weren't shown. As a result, I had to use my imagination to fill in some of the blanks. This is not always an easy task... you really have to breathe in the concept

E



F

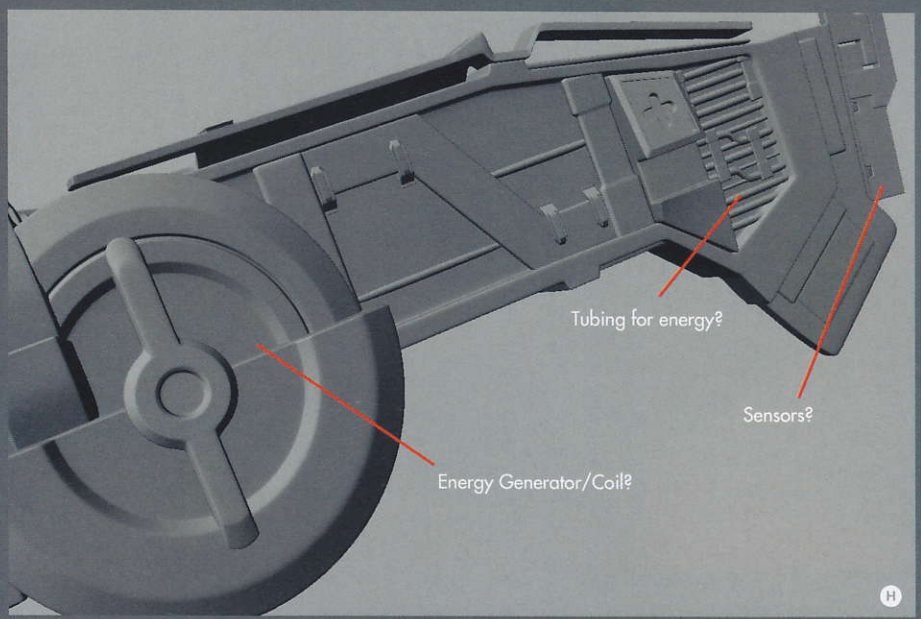
Problems & solutions

A frequent problem I had when I started modelling high-poly models a few years ago was pinching, especially on curved surfaces such as cylinders and spheres. Let's say I wanted to create a sphere with some plating on it; I selected the faces I wanted to extrude and started adding supporting edges to them, but once I previewed the smoothing (just press '3' to do this), I often noticed pinching around the corners.

In order to avoid this, kick off with a lot more divisions. This makes modelling a bit more difficult, seeing as you have a lot more components to work with, but the end result will be more than worth it. This also resolves the 'triangle pinching' on cylinder and sphere 'ends'.

When I'm making a cylinder that I know will have a lot of details and extrusions, I usually go with 40 or 80 divisions, depending on the complexity of the shape. Maya only allows you to go up to 50 divisions if you use the middle mouse slide in the Channel box, but you can type in another value manually by clicking in the field.

G



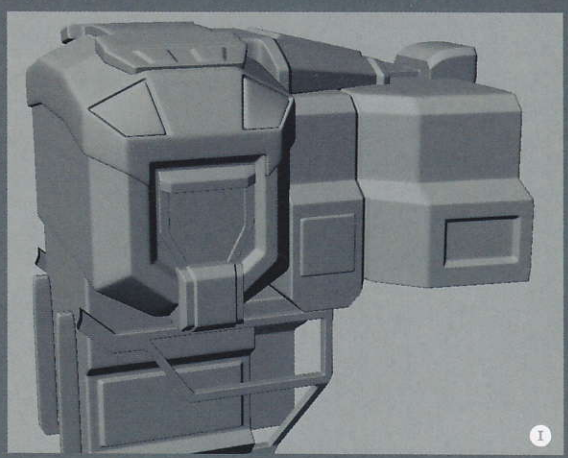
H

07 The big cylinder

The big cylinder in the middle of the ship is another of those areas that are kind of difficult to read. When I modelled this I was thinking that the engine and cannon were supposed to be able to rotate along an axis, so I made a lot of rivets and sliders to make it look functional in that aspect. To make the cylinder itself, I used a sphere that I split approximately three quarters of the way in. Then I scaled it to make the width look more in keeping with the concept. In order to easily select the faces in the middle to make the extrusion marked in the screenshot, I simply selected the centre vertex point, converted to face selection (Select>Convert Selection>To Faces) and expanded the selection (by pressing the '>' key) G.

08 Extension details

Now it was time to start adding more details to the ship. Since a lot of the details in the concept are blurry or hard to read I did my best to try and be a spaceship engineer. What were those extensions for? Were they sensors? Cannons? Tractor beams? I settled for sensors and started adding some electric wiring and plating there. I didn't want to overdo it, so I kept it fairly subtle – partly because that was the look I was going for with this model, and partly because I don't see why anyone would want a bunch of cables and fragile equipment exposed like that H.



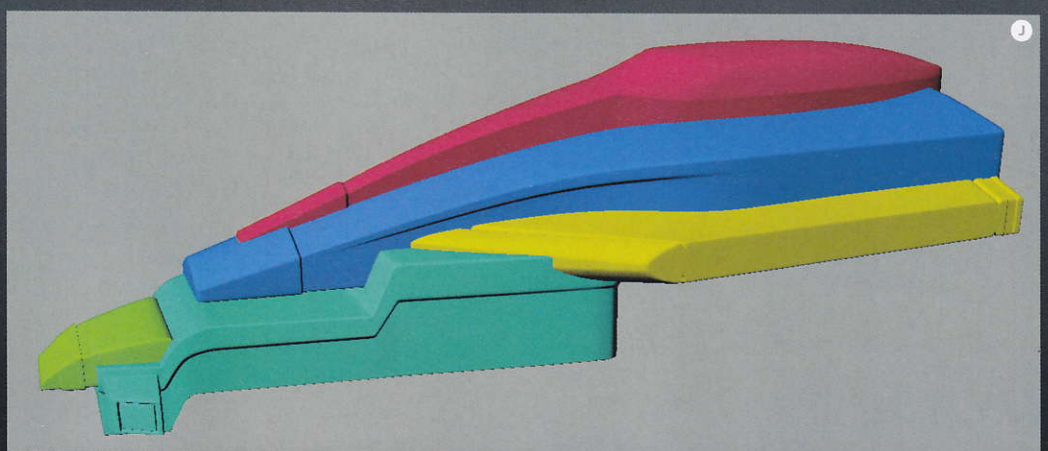
I

09 The 'waist'

I felt it was time to start working on the 'waist' of the ship. I really liked this part of the vehicle as it is so reminiscent of the real scorpions upon which it is based. I wanted to keep this part of the ship pretty clean, but still modular, so I used boxy shapes and added some basic plating to them. The most tricky part here was the cage at the bottom, but using a box and extruding can get you a long way. I simply made the basic shape that I wanted to cage in, and then used an extruded box to cage it in I.

Kill your darlings

Killing your darlings is a real cliché, but looking at work objectively and being ruthless can definitely improve your art. I found myself working on areas for a really long time to make them look 'right', but finally I decided to just delete them and remake them from scratch, keeping in mind my previous mistakes. Not only does this save you time in the long run, it usually ends up producing much better results. Don't be afraid to go back to a certain piece of the ship you're not happy with, hide it and start over. Then you can compare the new and old to see which piece looks best; more often than not, it'll be the new one!



J

10 Refine the fuselage

The fuselage was one of the most problematic areas for me when modelling this spaceship.

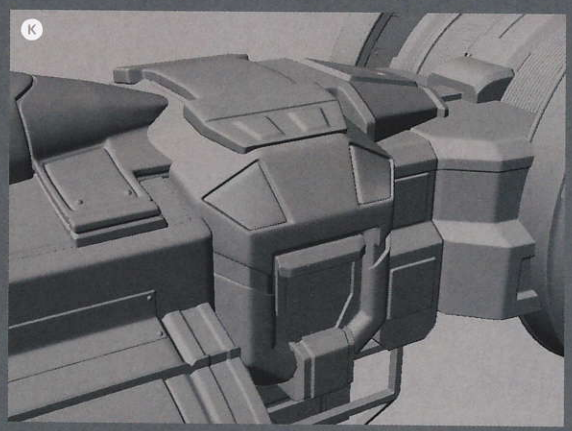
There were so many pieces overlapping each other and, at moments, I never thought I'd sort it out. But with some perseverance, I did! I used the aforementioned technique where I break up the area into segments and then tweaked and tweaked until it felt right. I've colour coded the segments for you in the screengrab so you can more easily see where the various pieces should go J.

The fine details

It's time to add the finishing touches

Less is more

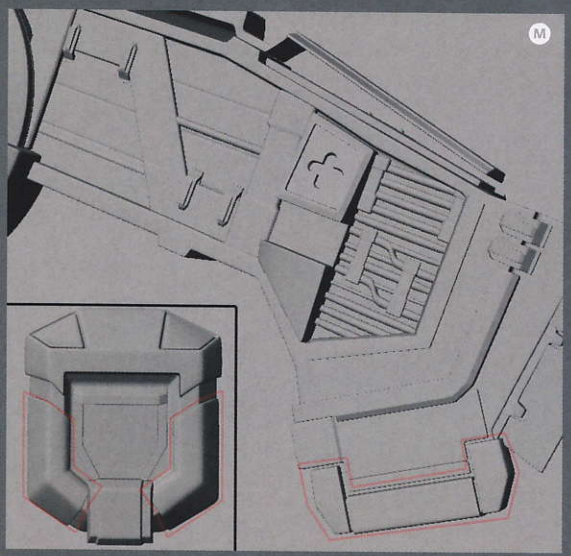
It's really important not to overdo details! It's very easy to go overboard with details when working with sci-fi, and then you risk confusing the observer. Also think about where framing is necessary. Which areas are exposed, and which areas are prone to bump into things, etc?

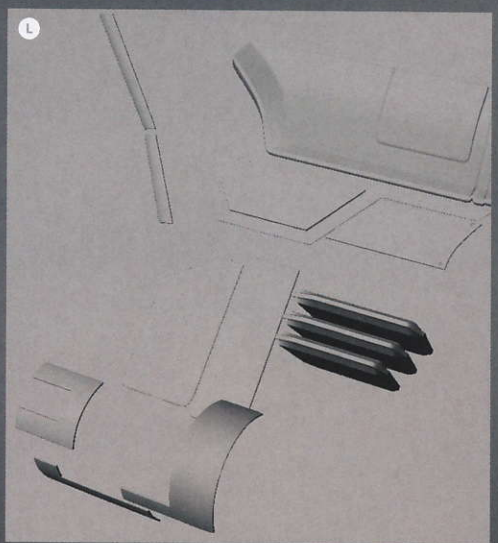


11 Modularity

Using the same techniques from earlier steps, finish up the engine area and cannon at the back. Now that we've refined the ship's shapes it's time to add the final touches to the model. I am a huge fan of modular designs in sci-fi – those that look as if you can remove certain parts and replace them with others, changing its function or purpose entirely K.

> "Another idea I wanted to try to make the design more modular was to frame some areas to make it feel more reinforced and less exposed – partly from a functional standpoint and partly because I knew it would look better"





12 Re-plate the wings

I really wasn't happy with how the wings looked; they were too clean and really not interesting enough. To make them pop a bit more, I added some subtle plating to them, by using the same technique as in Step 6. I didn't want them to grab too much attention from the 'main' plating that is coloured red in the concept, so I made the new plating follow their outlines and also made them thinner. Additionally I applied some plating to the 'cylinder' on the wing extension, using the same technique, but these ones are even thinner. I only wanted to hint at their existence L.

13 Framing and bolting

Another idea I wanted to try to make the design look a bit more modular was to frame some areas to make it feel more reinforced and less exposed – partly from a functional standpoint and partly because I knew it would look better. To frame things in, I simply used a cube and extruded along the edges of the object I wanted to frame. Once I was happy with the framing, I created a polygon sphere and placed it on hatches, plate edges and areas that looked as if they would be bolted on M.

Artist Showcase

Wiktor Öhman

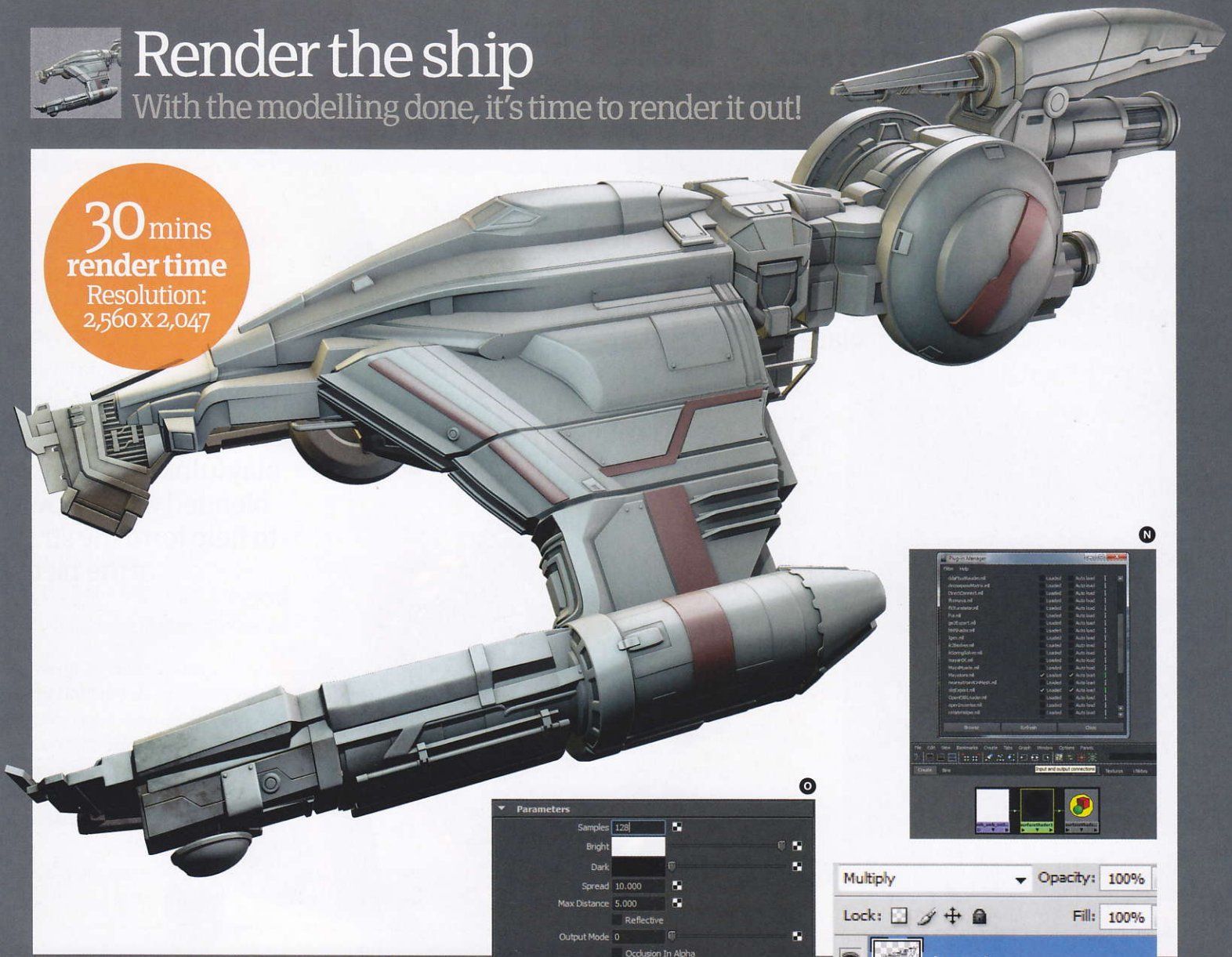
I'm a Swedish 3D artist who mainly focuses on hard-surface modelling and texturing. Although I am keen on moving more into concept artwork too.

Bandit Crossbow **Maya, Photoshop, Marmoset Toolbag (2010)** I decided to make the crossbow a mishmash between a few different weapon designs, making it look like it has been put together by a bandit who has been plundering

Heckler & Koch UMP45 **Maya, Photoshop, Marmoset Toolbag (2010)** This is a weapon I made to practise texturing a little while back. I chose this because it had a few really cool materials on it, eg some sort of plastic, bright metal and dark metal. It was a real challenge trying to define these diverse textures

Render the ship

With the modelling done, it's time to render it out!



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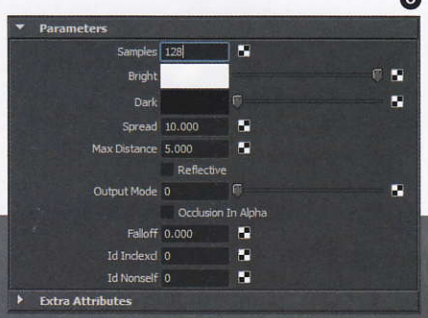

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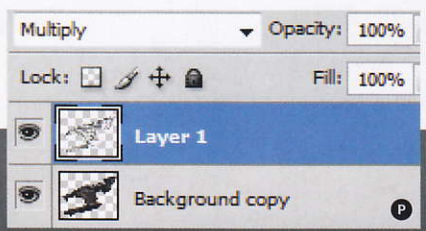


P

14 Ambient Occlusion node

In order to render out ambient occlusion, we need to create a simple material. First of all, make sure that you have loaded the mental ray plug-in (Window>Settings/Preferences>Plug-in Manager) and then check the Load and Auto-Load option.

Now create a surface shader and click Input and Output Connections at the top of the Hypershade, before going to the mental ray section of the Hypershade and creating a mib_amb_occlusion node.

In order to connect this node to the surface shader, middle mouse click the right arrow on the AO node and release it on the left arrow on the surface shader. Select Default in the settings popup N.

15 Tweak the material

Now that we have our AO material, it's time to tweak it. Double-click the mib_amb_occlusion node to open it in the Attribute Editor. Usually I leave most of the settings at default, but there is one thing I always change: the Samples value. This basically sets the quality of our AO and I usually set this to 128 O.

16 Rendering

Now that we have set up the quality, it's time to render. Assign the surface shader to your model by selecting it then holding down the right mouse button on the surface shader. Select Assign Material to Selection. Now go to the render settings and make sure mental ray is the current renderer; then go into the Quality tab and set it to Production. There are a lot of tweaks that you can do here, but default Production usually does the trick. Finally go into the Common tab and set the desired resolution.

17 Compositing

In order to get our ship presentable we need to render it out once more, but this time with a simple blinn on it. Set Reflectivity to 0 and lower the Specularity value a bit, then render it out. Bring both the blinn and AO versions of it into Photoshop and place the occlusion over the blinn layer. Set the blending mode to Multiply on the AO layer and play with the Levels (Cmd/Ctrl+L) so it pops. And you're done P!

Next issue

In the second and final part of this tutorial, I'll go over the texturing and rendering of the Scorpio spaceship using some cool techniques. I'll explain how to define materials, render settings and how to make a great AO render. I'll also be considering how to present your final image.

Modelling
Postproduction
Texturing

Software used in this piece

LightWave 3D | Blender | Photoshop

Making of Detective's Office

Detective's Office 2011

> With crimefighting sleuth games and films such as Rockstar's LA Noire and Dick Tracy in mind, this image looks to recapture the classic detective agency in 3D

Eugenio García Villarreal is 3D director at D10Studio

This tutorial shows the complete process behind this retro image, with a focus on the texturing and postprocessing stages. The major challenge of this piece is to capture the real essence of the classic detective agency, which we establish with a range of reference images. Fairly simple box modelling is used to create every object within the scene, and a final pass using some matte-painting techniques helps to really bring out the details and make the office feel more like a believable workplace. We predominantly use LightWave 3D, except for some object modelling in Blender, with the help of Ivan Rojo. All textures are from CGTextures (**www.cgtextures.com**), applied in Photoshop CS5 with a Wacom Intuos tablet.

Concept

We start to draw simple shapes to establish the major objects in the scene and the overall 'feel' of the office. It's also a good opportunity to decide upon the final camera angle for the work.

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

Eugenio García Villarreal

3DArtist online

Personal portfolio site
www.d10studio.com.mx

Country Mexico

Software used
LightWave 3D, Photoshop, Blender

Expertise Eugenio's skills lie in environment art and matte-painting techniques

01 Research

To begin, we go to town on Google, searching for classic detective images, retro offices and generally looking for objects to include in the scene. This is always a very important stage, where you'll get most of the inspiration for the work. Old-school detective films are also good inspiration. Once we have reference images, we start to block out the rough modelling for the next stage Ⓐ.

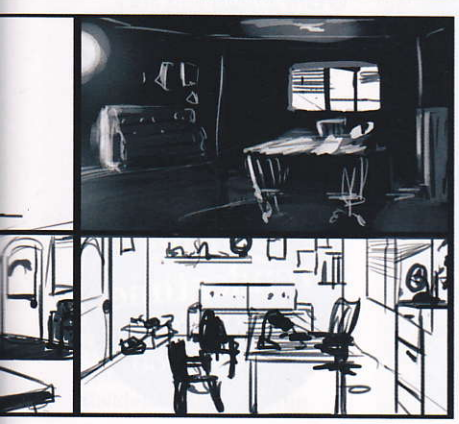
02 Sketches

The sketch stage is very fun and is the time to let your imagination go wild. Using the collection of reference imagery you have pooled, start to make some rough models to get an idea of arrangement and shapes, including the light. We just use boxes and a Directional light and make three options.

Once we've selected the best one, we apply the Overlay mode to maximise colours and then add textures, trying to capture fine details. Having a 3D base for the sketch is always helpful as you can polish your scene object by object right through to the end Ⓑ.

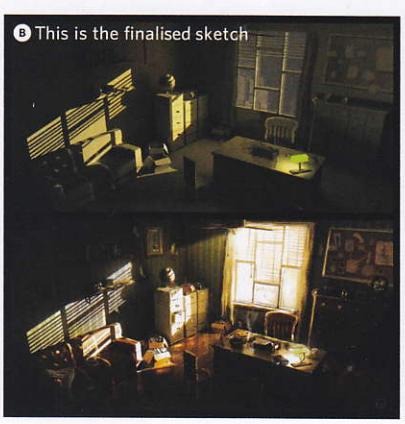
03 Make the room

Do a simple box model with holes for the windows, then detail these with window frames, glass and blinds. Next we work up the curtains, using LightWave's Sketch tool, drawing curves to get the fabric look. UV map all the surfaces and make some adjustments to blinds to reduce some of the uniformity for realism Ⓒ.



Ⓐ Google research

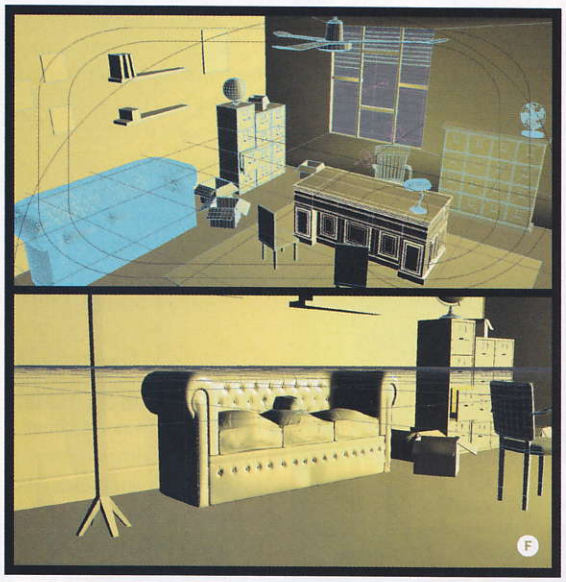
Ⓑ This is the finalised sketch

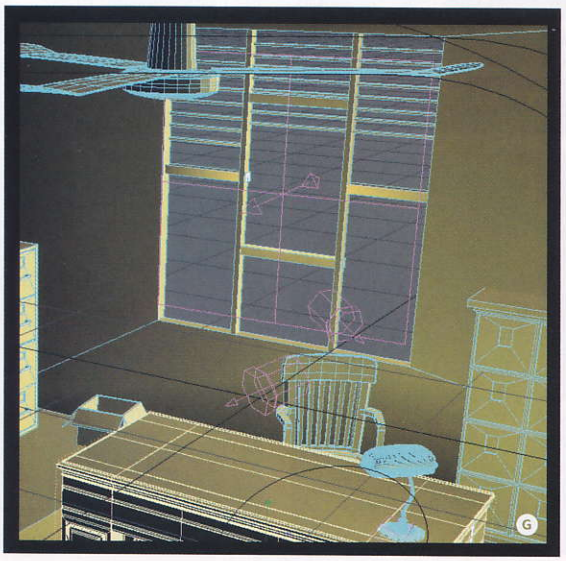


Ⓒ Room wireframe

Put together your agency

Investigate the 3D possibilities





> We box model a lot of objects, such as files, books and room fittings in LightWave and Blender. Some of these objects, eg the files and boxes, are cloned for speed

04 Model the furniture

In this step, we use LightWave and Blender to create the furniture. The sofa is made by Ivan Rojo in Blender, by simple box modelling, duplicating every cushion then using the Sculpt mode for finer details. The desk and chairs are done in LightWave 3D, also using simple box modelling, and then UV mapping the main surfaces D.

05 Model the objects

We box model a lot of little objects, such as files, books and room fittings in LightWave and Blender. Some of these objects, eg the files and boxes, are cloned for speed. The hat and detective's raincoat are created by box modelling as well, though the raincoat is also retouched in ZBrush and exported later as an OBJ file E.

06 Arrangement in LightWave

Only use the sketch as a guide, making up subtle details like the scale of the desk on the fly. Some areas in the original concept will be sketchier than others, both in regards to scale and textures, so be prepared to be creative during modelling. Next it's time to illuminate the scene F.

07 Lighting

We use a Directional light to get the classic effect of the half-open blinds. An Area light at the window is used as a filler; this has a Linear Falloff mode to make a nice gradient from light to dark. The lamp has an Area light too to create some interior shadows, while another Area light in the foreground, at 20% with Linear Falloff, adds some nice contrast to the scene G.

Problems & solutions

In this work, a major challenge is the lighting. We make a main window with all its details and add two unseen windows to the right of the room to get a good light bounce in the final render. Another challenge is texturing. We create a large UV map of the entire room and apply a series of 8,000 x 8,000 textures; it's good to use high-quality textures to get nice crisp effects in the final image and more information to play with in the final correction.

D Furniture models

E Wireframes of the objects

F Early arrangements of the objects in the scene

G Working with Directional and Area lights

5 hours render time
Resolution: 8,264 x 4,080

H

08 Texturing

We do a lot of render tests with FPrime – a great plug-in to see the image in real-time. Using this as a guide, we make all the tweaks of lights and object arrangement. The texturing is a very big job. Starting with the walls, we research wallpapers online, but finally end up using our own design. Most of the scene is wood, so we use a base image on all furniture, just applying rust and dents in some places. On the sofa, we use a leather shader with a bump image to get a nice texture. The books and document images are mostly from the web and CGTextures, while metal shaders are LightWave presets with a few adjustments H.

09 Final render

The final render is a huge ask of the computer. We render at 8,264 x 4,080 at a Quality of 5 in FPrime. Thanks to FPrime, the task is fairly painless because it's very fast, and because we aren't working this up for an animation, this is the ideal tool for the job. It's finished in five hours. We render a TGA with alphas in a single pass I.

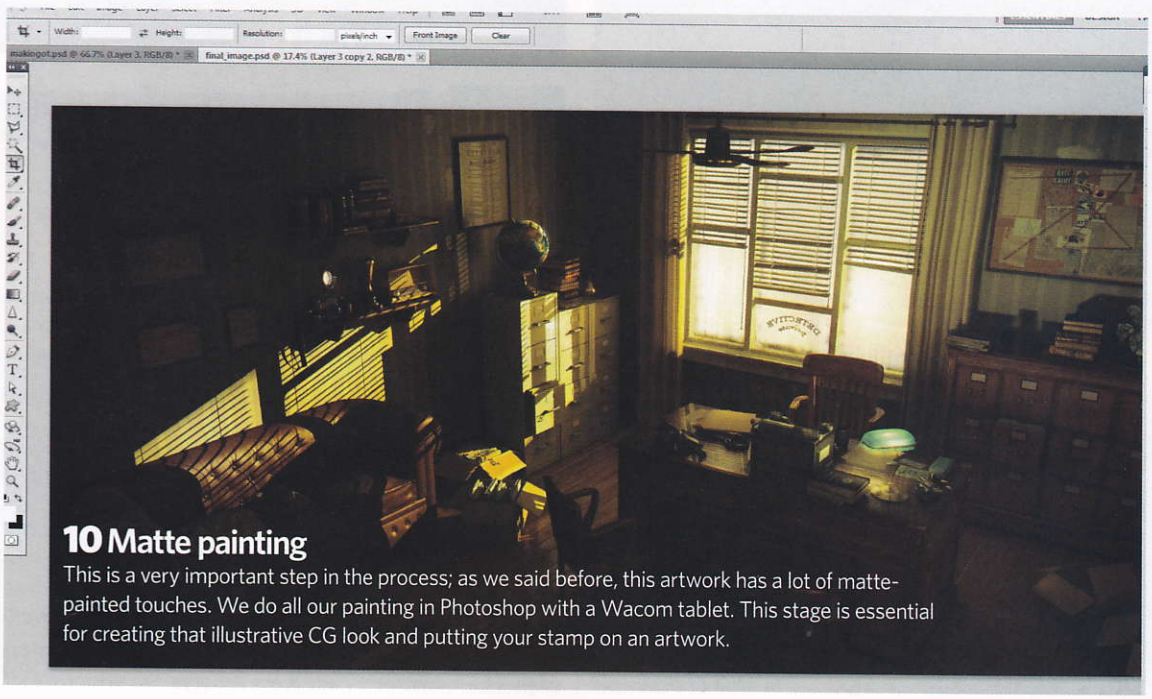
I Final raw render

Cool tools

Knowing your 3D program's tools is important. No matter which 3D package you use, it's integral to know them inside out.

Try to practise with CG tools when you find yourself with a little free time; maybe using a tutorial or even just setting yourself challenges. One nice challenge is to get a good animation of leaves and just to experiment. Never be frightened of trying out new tools – you might just find a few ways to make your workflow faster and better.

By boosting your knowledge and experience of a software's tools, you can really raise the bar when it comes to your 3D images and animations, so don't ever see 'playing with tools' as wasted time; it will pay dividends in the long run.



10 Matte painting

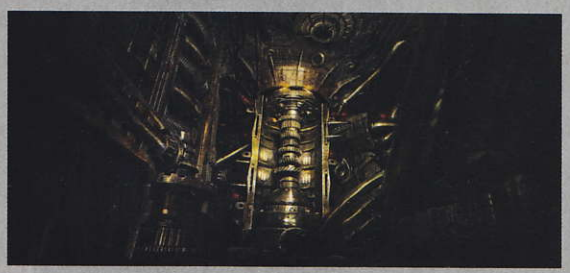
This is a very important step in the process; as we said before, this artwork has a lot of matte-painted touches. We do all our painting in Photoshop with a Wacom tablet. This stage is essential for creating that illustrative CG look and putting your stamp on an artwork.

Artist showcase

Eugenio García Villarreal

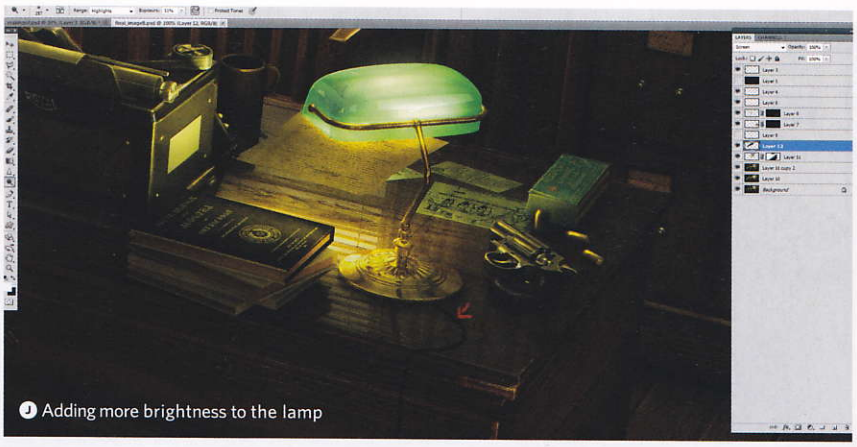
I'm a 28-year-old graphic designer, with nine years' experience in digital art. I taught myself 3D seven years ago, reading tutorials and researching on the web. I have experience making environments for web campaigns and books and am co-founder of D10Studio, a motion graphics and website studio.

D10Studio - 2 years, **LightWave 3D, Blender, Maya, Photoshop (2010)**
This image was done for the second anniversary of the studio. Everyone who works here collaborated on the idea

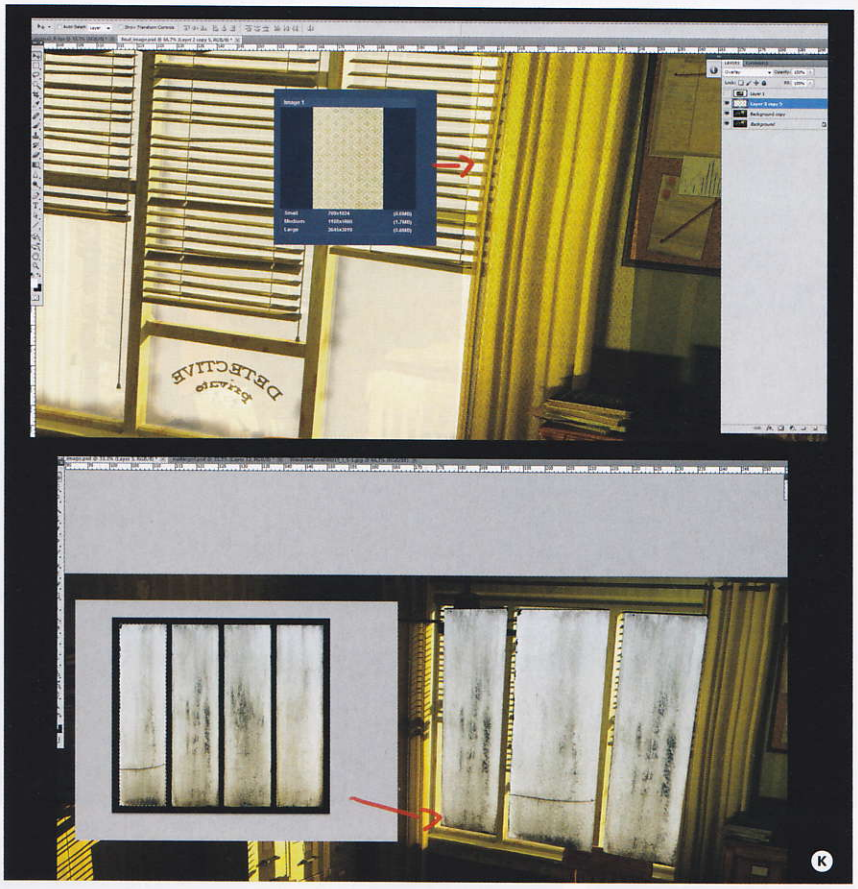


Gears Room, **Maya, LightWave 3D, Photoshop (2010)**
This image was created for a digital agency in Mexico called GrupoW as part of a web campaign entitled 'Alter Machine'. The main idea was to use an animated sequence to travel through six compartments within a big engine. Credit goes to Ivan Rojo for the modelling

Music Land, **LightWave 3D, Photoshop (2011)**
This image was done for a client as a web project. All modelling is done and rendered in LightWave 3D, and later composited in Photoshop. It took around five days to finish. Credit for the central guitar model goes to Alfredo Rocha



J Adding more brightness to the lamp



K

Postproduction

Wrap up the case

11 Initial colour correction

In the first step of postproduction, we do a quick brightness and contrast adjustment. Next we make the scene a little less saturated and add some sharpening in some areas. We also reduce the reds a little because the raw render is a bit overwhelmed by this colour.

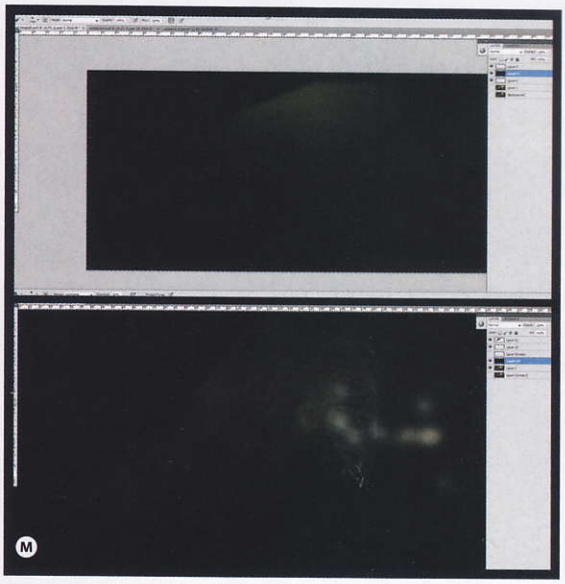
12 Details to fix

Because this is a still image, we now add some details that we forgot during the initial modelling, eg the cable from the lamp. We apply more specular to the files and make the light in the lamp more intense too. Touches like these really bring the office to life J.

13 Use textures strategically

Using textures as a tool, we find some decorative wood stock to merge into the desk, while the curtains are applied with an overlay wallpaper texture. We could have done this while rendering, but because this is a still image, we have the freedom to add it during the post stage. Feel free to apply any other textures, but bear in mind the final render time K.

L



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> Pulling out details, we use the Dodge and Burn tools, as well as Color Dodge blending, to highlight tiny details like bevels, edges... [and] textures

On the pulse

A really important item of any 3D artist is an online portfolio. It's very beneficial to have your own site to show off your latest artwork and to sell yourself to clients. You can use forums too to get advice and comments from other artists, and these keep you on the pulse of 3D and CG trend topics. So if you want to raise your profile, make sure you get some exposure for your work.

K Some of the textures applied to breathe life into the office

14 The little details

We find it's good to do this step when you get a moment of peace because, like a traditional painting, you need to concentrate. Pulling out details, we use the Dodge and Burn tools, as well as Color Dodge blending, to highlight tiny details like bevels, edges, contrasting textures, etc. Many will not notice these details, but they make all the difference between a raw render and a top-quality image L.

15 Volumetric light and particles

Once we have all the details right, we add the volumetric light – a selection filled with a yellow-tinted airbrush, set to Screen blending mode at 40% Opacity. Next we make a selection of the window and apply a Radial blur to get some shadows in the blinds; we make this yellow and set it at 20% Opacity. The dust effect is found from a web search; we opt for an astronomical photo of stars, applied with Screen blending, and use the Sharpen tool to make the particles more defined. Use smoke brushes for the cigar, playing with opacity and blur values to get the best effect M.

N

16 Final CC

We make a new file with all layers merged, then use the HDR tool in Photoshop and apply a High Pass filter. Next we copy the image and blend it with the original at 40% to get some contrast and details between light and shadows. Finally, the Dodge tool is used around the windows to work up some bright accents N.

17 Final image

Now we consider last-minute details; usually we do this one day later to see if we overlooked anything. We add some spiderwebs in this image as a final subtle but atmospheric touch. And we're done; this PI agency is ready for business O!

L The Dodge tool used on edges

M Volumetric light and particles

N Colour correction in Photoshop with the High Pass filter

O The piece is finished off with a few spiderwebs

Final thoughts

Every image presents its own challenges and you will learn new things on every project. It's important to have patience at every stage of the process in order to get a better quality image come the end. Finally, we want to thank Ivan Rojo who modelled some of the objects in this scene and Alejandro Tello for his help with the final colour correction.

O

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

Ted Lockwood

3DArtistonline

Username: TedLockwood

Personal portfolio site
www.monkeyknifefights.com

Country USA

Software used
ZBrush 4

Expertise Ted mainly sculpts creatures and characters for videogames, advertising and film

ShadowBoxing with style

Blockette 2011

> Use the new ShadowBox tool in ZBrush 4 to blend a stylised character with abstract shapes

Ted Lockwood is a freelance character artist

On the Disc

'Bust_Base.obj'
'Blockette.ztl'

In this tutorial, we'll be demonstrating how to use ShadowBox, one of ZBrush 4's powerful new tools, in conjunction with several other features, to build a stylised, abstract character with a loose, fun workflow. The goal of this guide is to equip you with the tools and knowledge to concept, explore and develop an idea entirely within ZBrush. The more comfortable you are with your tools, the less you have to think about how to create what you want, and the easier it is to just let the ideas flow!

ZBrush is one of the few 3D programs that enable artists to use fluid and expressive techniques usually reserved for traditional media, with the technical capabilities only possible in the digital realm. As you follow this workshop, keep in mind that you should always be experimenting with the sculpt. Save frequently in iterations, move up and down through subdivision levels, and try not to get locked into an overly specific concept.

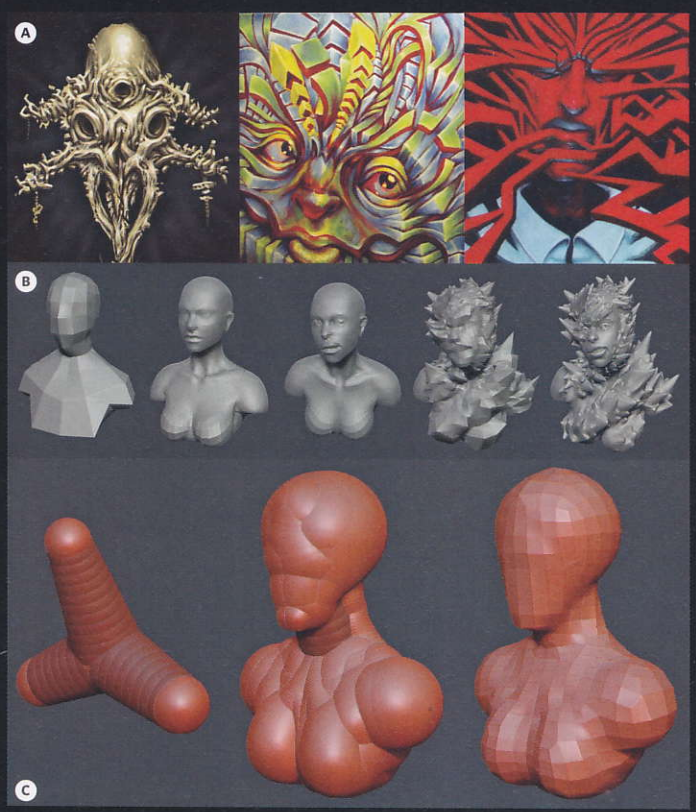
We'll see how to develop organic and hard-surface models from scratch, and explore different ways to manipulate and combine them to create truly unique and expressive sculpts. This is an advanced tutorial that assumes you already have a firm grasp on the basics of ZBrush.

Concept

I've always been fascinated by traditional art that combines abstract, angular forms with familiar organic shapes to produce surreal illustrations. For this project, I'm attempting to create a similar concept entirely within ZBrush.

Style exploration

Finding your direction



A Combining abstract 3D shapes and organic designs can produce truly unique, eye-grabbing illustrations

B When you find a design you like, save it and create another

C Make sure you have uniform polygon density and use the Shift key to smooth your ZSketch as needed

01 Get in the mood

I like to begin my character sculpts with an attitude or feeling to base the character on. It helps give me a solid direction for the pose and expression, without putting limits on the design itself. Keep a small mirror handy for studying your own expressions, and always grab reference material to draw from A.

02 Play with ideas

Using the base mesh included on the disc, begin laying out the basic anatomy with Symmetry turned on. Once you've got the main features in place, save your sculpt, turn off Symmetry and really start playing with it. Push yourself to make shapes and forms outside of your comfort zone B.

03 The base mesh

Create a ZSphere, activate Symmetry and build a simple base for your model. Press Shift+A to enable ZSketch mode, and begin drawing on the ZSpheres. Hit the Optimize button occasionally to clean up your sketch. Hit 'A' once to preview the mesh, then again to continue editing. Then select Make PolyMesh 3D once you're happy with your mesh C.

Modelling
PolyPainting
Rendering

Software used in this piece

ZBrush 4

Tools of the trade

ShadowBox, alphas and Transpose

> Knowing how to use the Transpose tools is essential for quickly manipulating different SubTools. Play with the Move, Rotate and Scale tools to familiarise yourself with what they can do

04 Introduction to ShadowBox

Create a Cube3D primitive and press Make PolyMesh 3D, then activate ShadowBox by hitting the button near the bottom of the SubTool rollout. Holding the Cmd/Ctrl key, click and drag anywhere on the canvas outside the ShadowBox to clear all masks. Play with drawing masks on the three sides of the ShadowBox and see how they affect the resulting object D.

05 Let it slide

The ShadowBox panel has two sliders: the Resolution (Res) slider and the Polish slider. The Res slider, unsurprisingly, determines the resolution quality of the ShadowBox planes and the resulting mesh, while the Polish slider affects the overall smoothness of the shapes E.

06 Alphas in ShadowBox

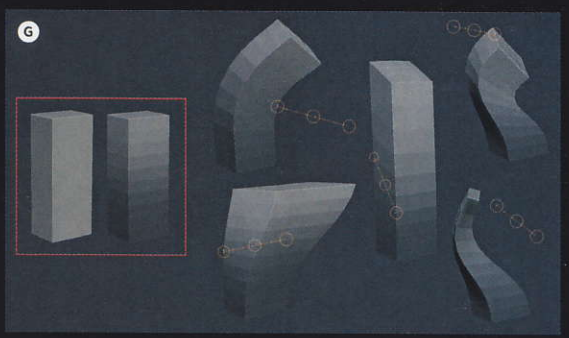
Now that we've got the basics down, we can really start exploring the power of ShadowBox. Using Alpha masks created in Photoshop, we can create even more complex objects. You can use all the existing ZBrush masking tools within ShadowBox to create almost any shape imaginable F.

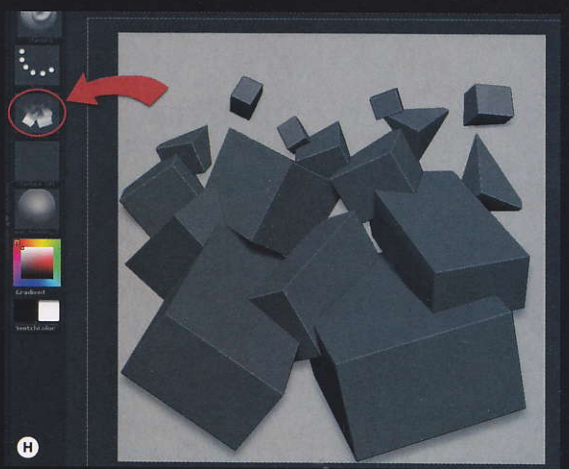
07 Get crazy with Transpose

Knowing how to use the Transpose tools is essential for quickly manipulating different SubTools. Play with the Move, Rotate and Scale tools to familiarise yourself with what they can do. The last circle on the Move gizmo, for instance, is perfect for distorting and scaling the kinds of shapes we're working with in this tutorial G.

08 Create the block alpha

To combine the abstract shapes and organic sculpt we'll make an alpha to simulate blocks growing out of the character's skin. Create a Plane3D object and append a Cube3D primitive. Duplicate the cube a few times and use Transpose to orient them until your tool looks like that in the screengrab. Hit the GrabDoc button in the Alpha menu to turn your tool into an alpha H.





The mighty ShadowBox

The new ShadowBox tool in ZBrush 4 gives artists the ability to create objects and shapes never before possible in previous releases. The simplicity of the workflow hides a very robust and powerful feature.

By drawing masks on the three ShadowBox planes, it creates new objects out of the intersection of those masks. With a little practice, ShadowBox can quickly become one of the most useful components in your ZBrush workflow.

Using Alpha masks created in Photoshop or another 2D program, we have even more freedom with what we can create. Combining alphas with the various types of symmetry within ZBrush, we can easily build anything from unique base meshes for sculpting, to complex hard-surface objects like gears and ornaments, to mind-bending abstract shapes. This walkthrough provides a basic understanding of how to use ShadowBox, but in reality, we're barely scratching the surface!

D Keep Perspective disabled while using ShadowBox to avoid accidentally masking other faces

E Changes to the Res and Polish sliders won't appear until you turn ShadowBox off, then back on

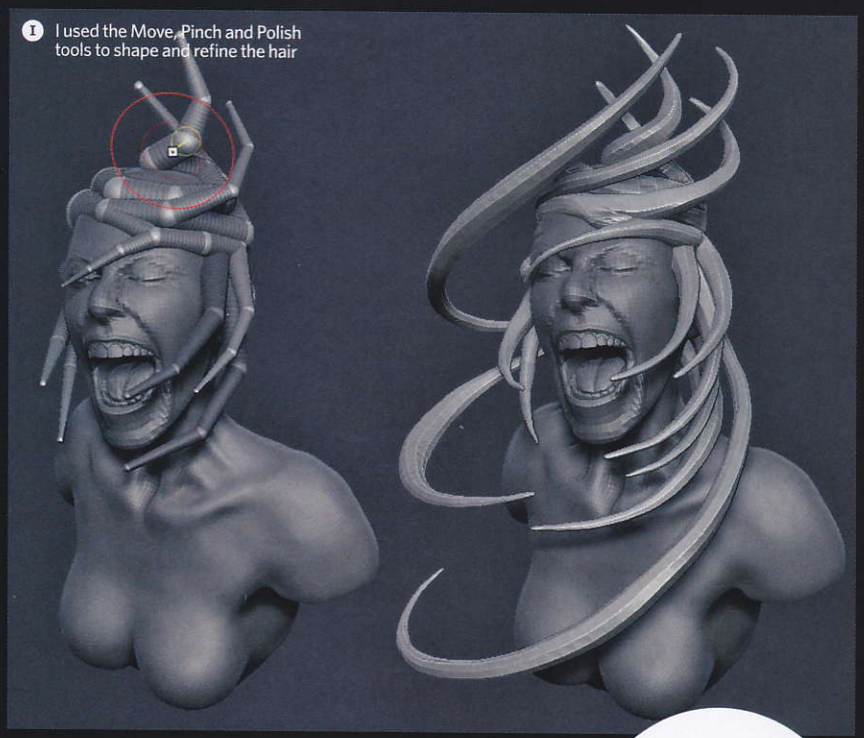
F Turn up the resolution to use more detailed masks

G Use a blurred mask to attenuate the distortions and keep part of the SubTool anchored

H Make sure none of your blocks go past the edges of the plane

The final sculpt

Putting it all together



I I used the Move, Pinch and Polish tools to shape and refine the hair

09 Organics

Use the base mesh we created earlier with ZSketch to sculpt the anatomy and pose that we blocked out in the concept phase. I used ShadowBox to create base meshes for the teeth and tongue, and ZSpheres for the hair I.

35 mins render time Resolution: 3,000 x 3,000

10 Block it out

Append a Cube3D SubTool to your body sculpt, activate ShadowBox and clear the mask. To create a simple abstract shape that will deform cleanly, I used the minimum Res and Polish settings. Once I create the basic block shape, I use masks and the Transpose tools (Move, Rotate and Scale) to give it a flared form J.

11 Create block clusters

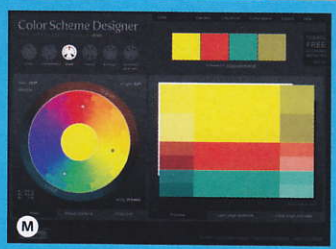
Use Decimation Master to bring the polycount as low as possible, then duplicate the block and use Transpose to build a cluster of them. Hide everything else and hit the Merge Visible button to turn them into a single tool. This resulting object becomes a new separate tool; you'll need to append it back into your main project K.

PolyPainting

First, we'll need to decide on a colour scheme. I've decided to paint this character with relatively realistic colours, but the blocks and hair really have to pop, so we can use some bolder shades for those. For the skin, activate PolyPainting and lay down a base layer of a generic skin colour by going to the colour menu and pressing 'Fill object'. Human skin has a lot of subtle layers and colours, but we're only going to worry about the warm and cool spots on the face for this. Lay down some blues and reds in the appropriate areas, as per the screenshot, and then go over them with the base skin colour to blend.

Gradients are your friend. I've found the blocks and hair look best with a darker colour near the roots, transitioning to a much lighter tone towards the ends with a slight change in hue from base to tip. The hue change gives them a much more dynamic feel, and the gradient helps lead the eye. ZBrush 4 has a handy new option that helps a lot with this: the Topological automask. Located in the Brush menu, turn this on and your brush will be bound by the topology of your sculpt. With every new stroke, you'll only affect the piece of geometry you started on until you begin another. This feature can be applied to any brush for PolyPainting and sculpting, and it helps a ton with precision editing busy topology, like these blocks!

L



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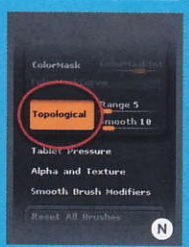

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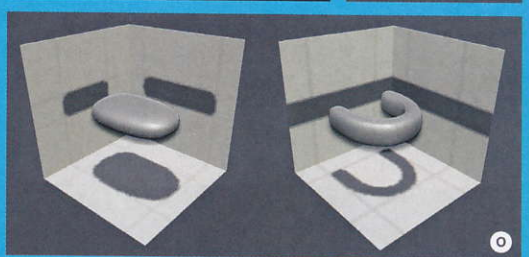


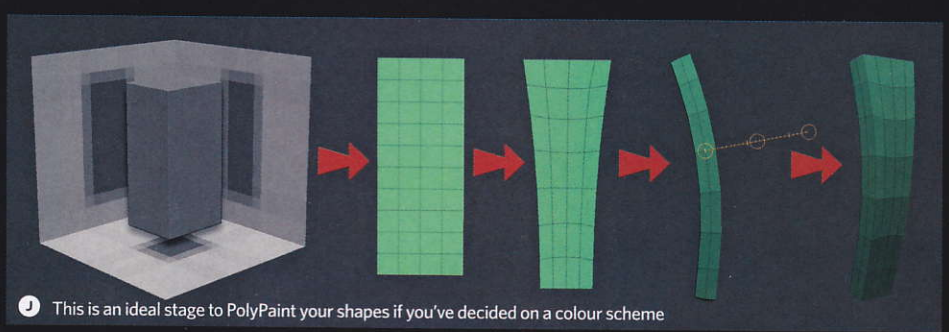
O

L Using a 50% RGB Intensity helps to blend the colours

M A great tool I occasionally use is **www.colorschemedesigner.com**. The colour picker is intuitive and has a whole range of options for playing with colour variations

N Activate the Topological brush option to simplify PolyPainting your giant cluster of blocks

O ShadowBoxes for the tongue and teeth base meshes



J This is an ideal stage to PolyPaint your shapes if you've decided on a colour scheme

K Make sure you keep the polygon count low

Artist showcase

Ted Lockwood

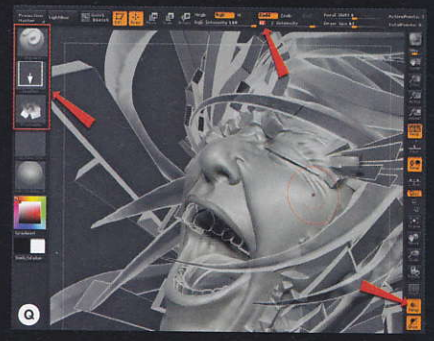
I began my career five years ago as an outsourcing artist in the games industry. I discovered ZBrush and acrylic painting around the same time, which quickly transformed art from a job into a lifestyle. Since then, I've spent most of my time playing with paint, sculpting and trying to find new challenges.

Old Boy **ZBrush 3.5r3 (2011)**
End product of a ZBrush sketch session

Gobby **ZBrush 3.5r3 (2010)**
End product of a ZBrush sketch session

Woody **ZBrush 3.5r3 (2010)**
Warm-up sketch for a ZBrush contest

To switch between SubTools easily, hold Opt/Alt and click on any SubTool to make it the active tool



Play with the FocalAngle slider in the Draw menu to push the style even more

12 Place the blocks

Now that we have a nice library of blocks, begin duplicating and placing around the model. Then, hide everything else, merge them into one tool and replace your many SubTools with the new merged one. Use the Auto Groups button in the PolyGroups rollout to assign a unique PolyGroup to every block, then hit Groups Split in the SubTool rollout to make every block a unique SubTool P.

13 Tie it all together

Finally, we'll use our blocky alpha to integrate the blocks with the character. Using the Standard sculpting tool with a high Z-Intensity, select the DragRect stroke type and the block alpha. With the character SubTool active, hit the Transparency button and place transition blocks where the character and block SubTools intersect Q.

> Use the Auto Groups button in the PolyGroups rollout to assign a unique PolyGroup to every block, then hit Groups Split in the SubTool rollout to make every block a unique SubTool

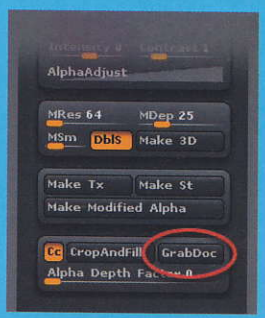
Rendering

For the final render, I use a variety of different materials and lighting setups, but I always include these few basic render passes:

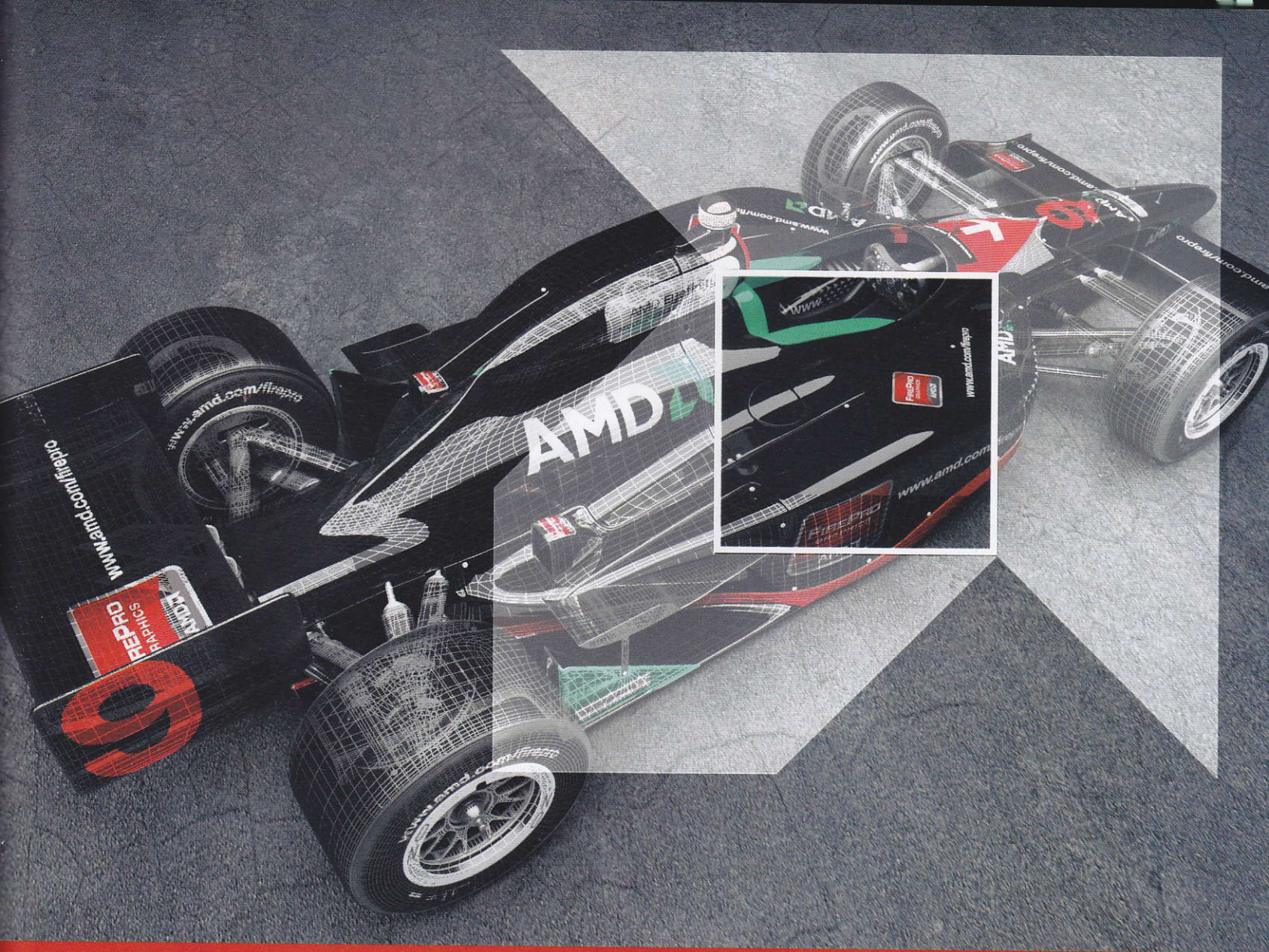
- Flat Color – this will serve as the base layer for the composite in Photoshop
- Side, rim and backlights – set these to Lighten or a similar layer style
- Ambient Occlusion – a lot of materials will give you a decent AO when rendered with the Best setting. See the screenshot for the general look we're aiming for. Try a Multiply layer style for this
- Depth map – this helps to really pop your image. Create it by going up to the Alpha menu and selecting GrabDoc. ZBrush will take a screenshot of your current tool and put it in the alpha library, from which you can export it. Material settings and PolyPainting do not matter for this.

With these renders, we can start building our composite in Photoshop. Play with various layer styles and try rendering out some other passes with interesting material and lighting settings, and you'll have a great-looking image in no time!

Render passes, clockwise from top left: Depth, Flat Color, side light et al and Ambient Occlusion



Hit the GrabDoc button under the Alpha menu to grab your Depth map



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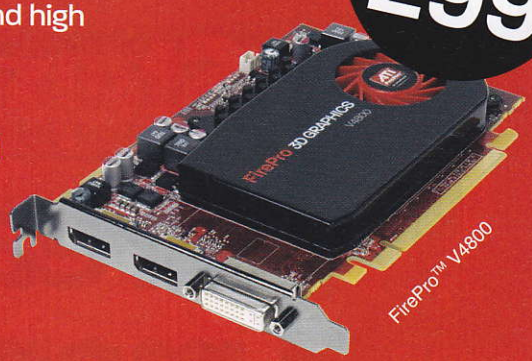

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Modelling
Texturing

Step by step

Easy-to-follow guides take you from concept to the final render

Step by step:

Create paper monsters in modo

Mythical papercraft creatures 2011

"An image inspired by altered books and papercraft with stylised characters in a playful setting"

Richard Yot is a traditional and digital illustrator

Artist info

Richard Yot

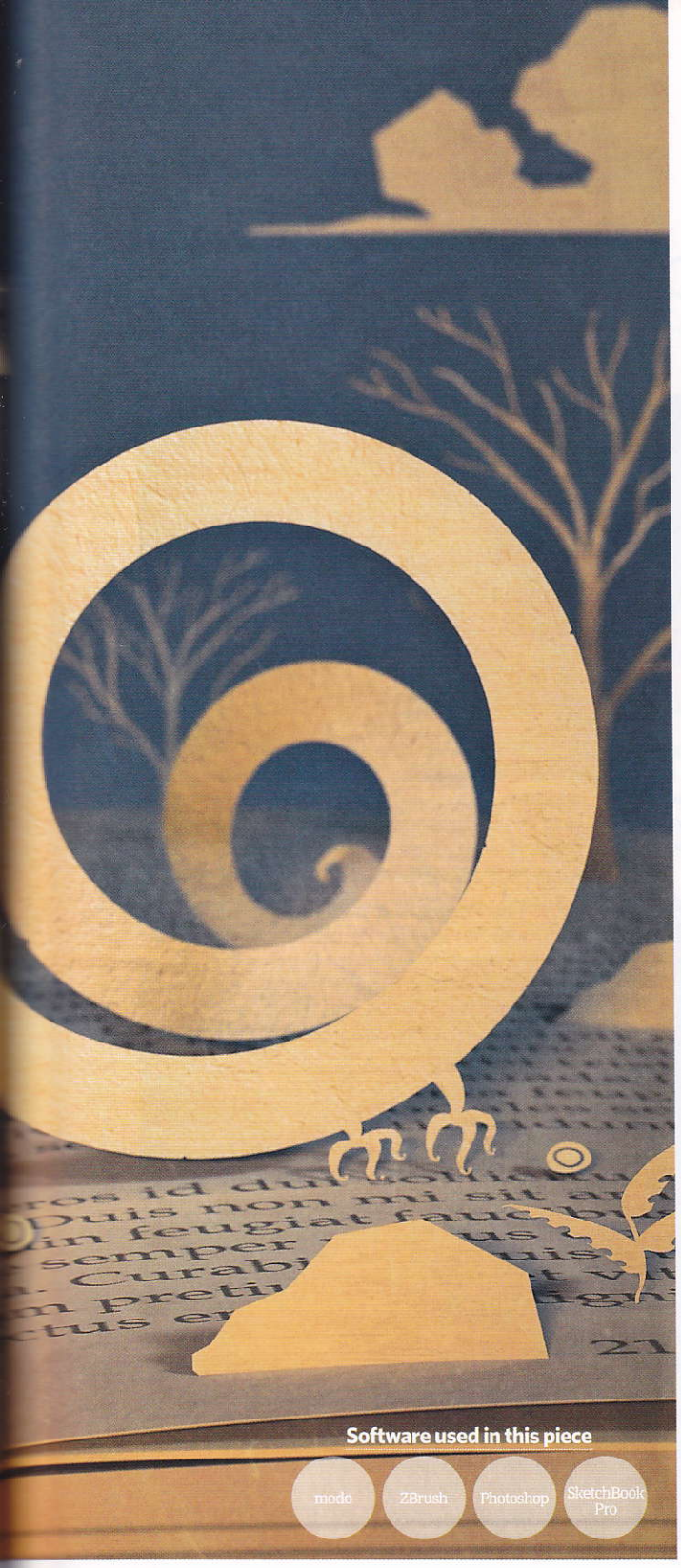
3DArtistonline

Personal portfolio site
www.itchy-animation.co.uk

Country UK

Software used
modo, ZBrush, Photoshop, SketchBook Pro

Expertise Richard specialises in creating characters and worlds for them to inhabit



My original inspiration for this illustration was the idea of stories coming to life, based around a children's story I had written. I tried various concepts before hitting on the one that I felt worked best. Initially I was going to have the action take place on a miniature stage before I came up with the final concept with the open book. I spent almost a month just developing the look and feel and the ideas, before diving in to create the illustration itself. I always wanted the image to have a hand-made feel – that is a theme that recurs through all of my work at the moment.

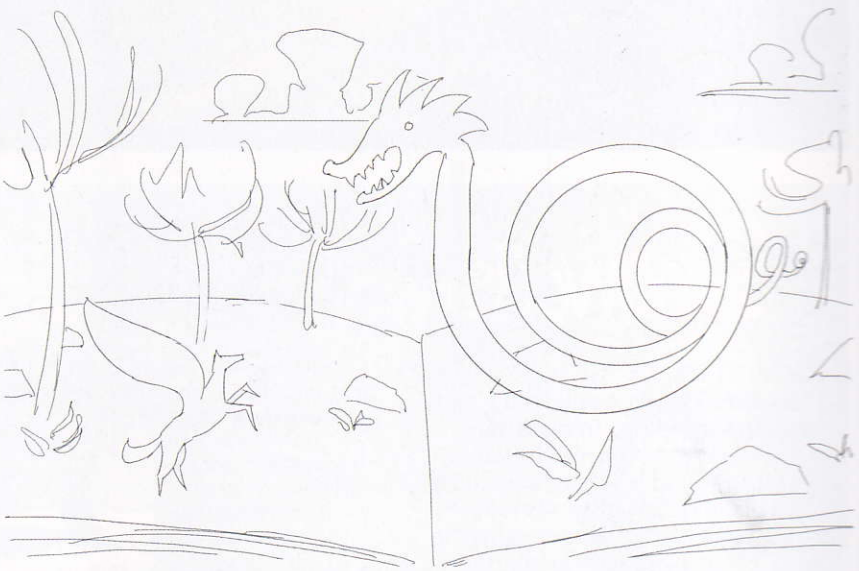
The idea that I was drawn to from the very beginning was combining flat shapes with depth, creating a contrast between the 2D elements and the 3D setting. It lends a playful feeling to the image and also creates visual interest and, despite the flatness of the elements, the final image has a lot of depth.

Concepts

Roughing out my ideas

01 Initially I spent some time exploring the concept of setting the scene on a stage, which would be made of cut-out paper, combining 2D with 3D elements. I did really like some of my early colourful concepts, but as the project evolved, I found the stage idea didn't really fit with the story that I was writing so I had to abandon it.

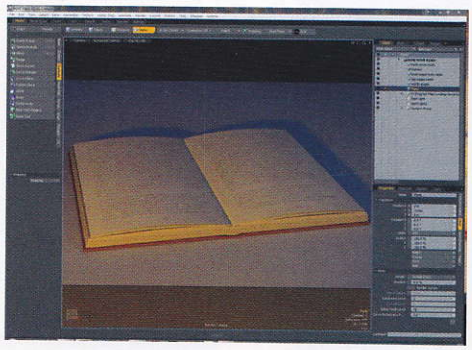
02 The next idea I explored was miniature dioramas, but I found this still wasn't quite right. Then I simply drew the outline of a book on top of one of my test renders in Photoshop and suddenly the idea was born. I then looked at some altered books on Flickr for reference and the concept was ready to go.



03 The characters were then conceptualised in very rough form in SketchBook Pro on my tablet PC, and the layout of the scene was roughed out. I often keep my concepts very loose because I like to leave some room for spontaneity and creativity during the execution.

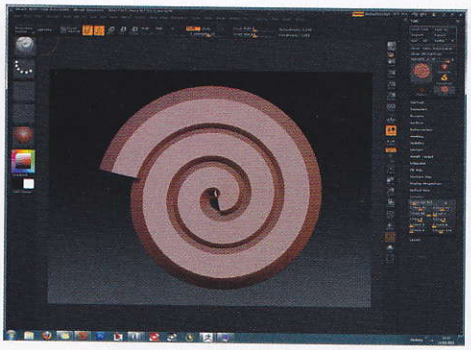
Moving into 3D

With the concept finalised, it's time to start fleshing it out

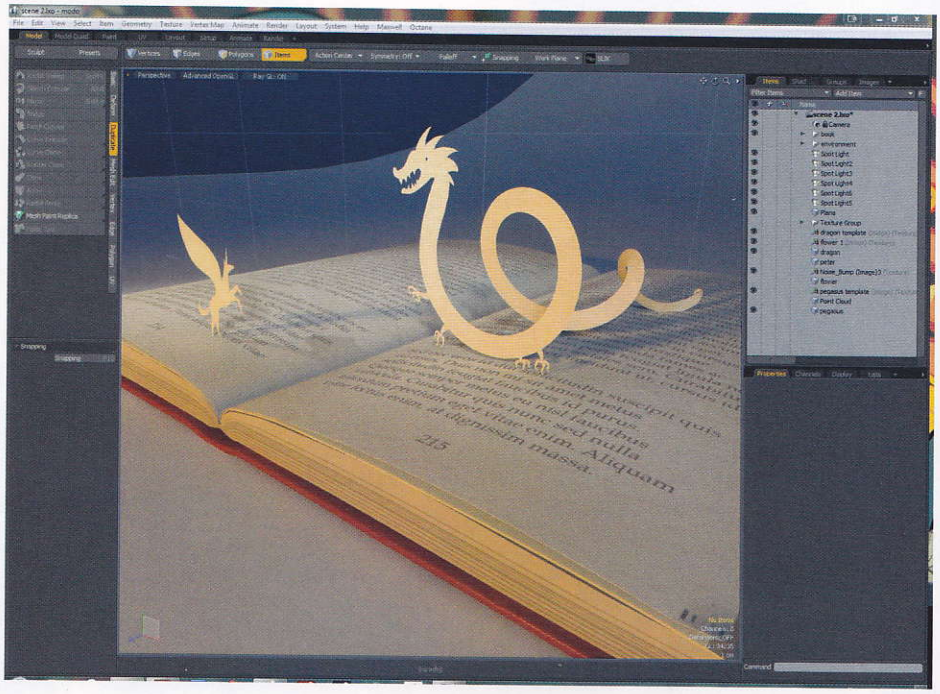


04 **I modelled the book** in modo, using basic polygonal tools. The texture on the pages was made to look worn, and I typeset some Lorem Ipsum (fake Latin used by designers to lay out blocks of text) to create the type. I added some additional pages on top for realism.

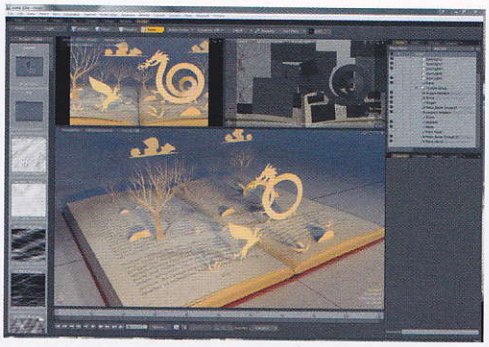
05 **I then drew** a stylised tree in Photoshop and used it as a stencil on a plane. At this point I spent more time working on the look and feel, starting to work on the lighting and colours. I was careful to keep the hand-crafted feeling but also add in some lyricism with the lighting.



06 **While an excellent** polygon modeller, modo doesn't have much in the way of parametric primitives, so to create the spiral for the dragon's body I used ZBrush. This was brought back in to modo and rendered out as a template to paint the stencil in PS. I added some flat polygons for the head and limbs.



07 **The Pegasus stencil** was simply drawn with the Pen tool in Photoshop, and I added little dings to the stencils for both characters as subtle imperfections. The Pegasus stencil could just be mapped to a plane, and the dragon was mapped on to my original spiral, which I then stretched out back over the page to create some depth.



08 **The environment elements** were painted in Photoshop as stencils and mapped on to planes, then distributed around the scene. Working in 2D this way makes it very easy to add character to the shapes; it's also very quick.

Artist showcase

Richard Yot

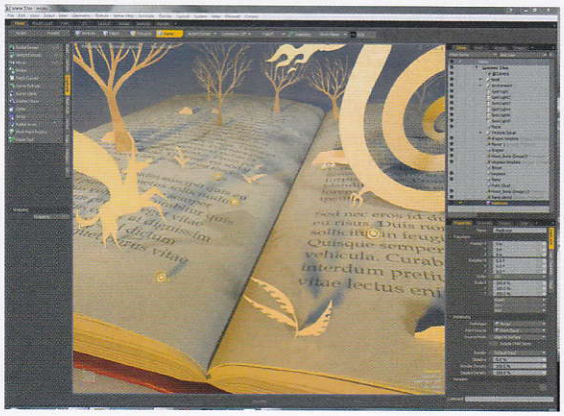
I have been a freelance illustrator for 13 years and I specialise in character creation, working with production companies and advertising agencies on concepts for campaigns and products. Recent work has included creating the initial character designs for the Andrex Puppy World campaign by JWT.

***Blob*, ZBrush, modo, Photoshop (2011)**
A character developed for a personal project. With this fellow I wanted to combine the hand-made feel and papier-mâché look with a really far-out design. His markings were inspired by a trip to the Horniman Museum in London where I saw some fantastic primitive art from the Pacific

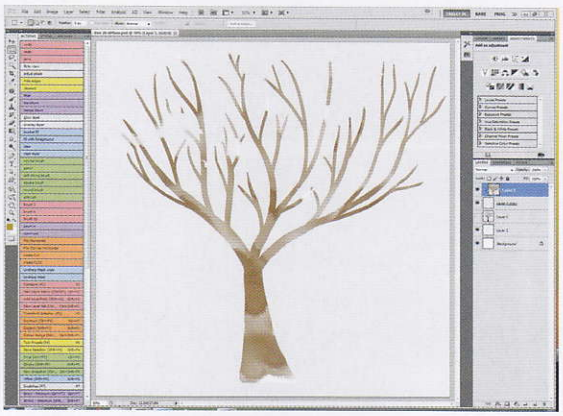
***Charlie*, ZBrush, modo, Photoshop (2011)**
Another papier-mâché-inspired character, this one is more childlike in his design – in fact I had initially made a real papier-mâché penguin with my son and liked the design enough to re-create it very faithfully in 3D with all of its hand-made charm

The final chapter

Adding the finishing touches for a happy ever render



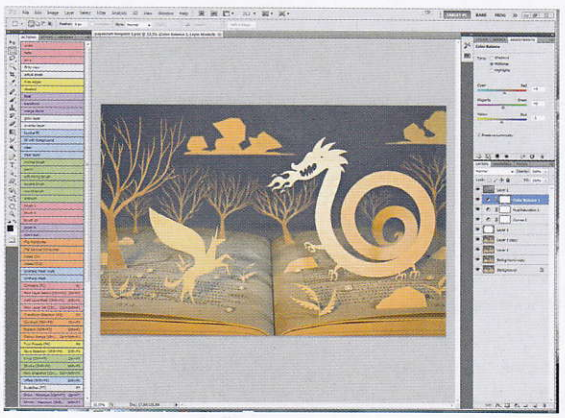
09 **The little stylised** flowers were created with a Replicator item and dotted around the scene with the Mesh Paint tool. The process creates a point cloud made of vertices indicating the position of each replicated flower, so it's easy to go back and move these vertices later if need be. modo's Ray GL is invaluable when positioning fiddly objects like these.



10 **To create the paper** textures on the characters and background elements I used a scratchy cardboard texture, and added some subsurface scattering to make the material more realistic. I also added a very subtle watercolour texture to the trees, which was digitally painted in Photoshop.

11 **With the scene built** I finalised the lighting. I used warm lights against the cool environmental colour and made sure that the characters had some extra lights pointed at them to make them stand out. The dragon's head against the blue background is the area of highest contrast so the eye is naturally drawn there first.

12 **The simplicity of this** scene meant it was easy to render and even the high-res file rendered in under an hour. I made sure to add a little bloom to the Final Color Output in modo, which along with the shallow depth of field helps to make the image convincingly photographic.

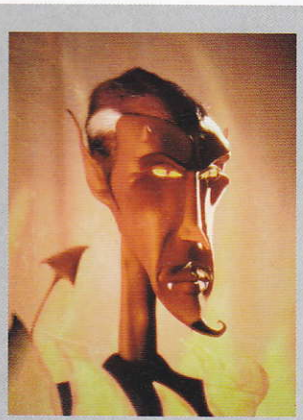


13 **Finally I did some** colour correction in Photoshop to bring out the warm tones, and used the Diffuse Glow filter very subtly, before adding a little vignetting and also a hint of the Unsharp Mask filter. The final touch was to add a little noise and the image was done.

Drawing & design skills

For this image the main skills used were those of drawing and illustrative design. Most of the shapes in the image were drawn in Photoshop and, as a result, the work required as much in the way of 2D skills as 3D ones. All of my characters start out as drawings, and I spend much of my free time designing new characters on my tablet PC in SketchBook Pro.

I liked being able to combine the hand-drawn elements with a 3D backdrop and, with the addition of some nice lighting, these really took on a new lease of life, which is perfectly suited to the page metaphor in the illustration.



***The Devil*, Sculptris, modo, Photoshop (2010)**

This sculpt was based on a digital painting I had created back in 2006 and I wanted to update in keeping with my current style. He was created from scratch in Sculptris, complete with fingerprints, and then hairstyled, textured and rendered in modo with some final ageing effects applied within Photoshop

4.1 hours render time
Resolution: 3,000 x 1,995

Software used in this piece

Maya | mental ray | XenoDream

Modelling
Lighting

Abstract shapes with XenoDream & Maya

Diatom 2011

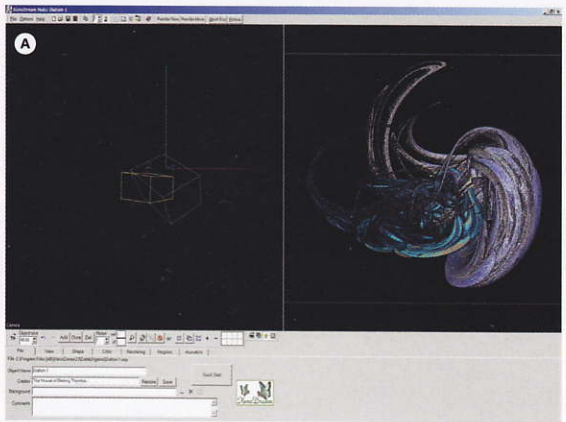
In this tutorial learn how to create a complex-looking abstract work with believable lighting and rendering

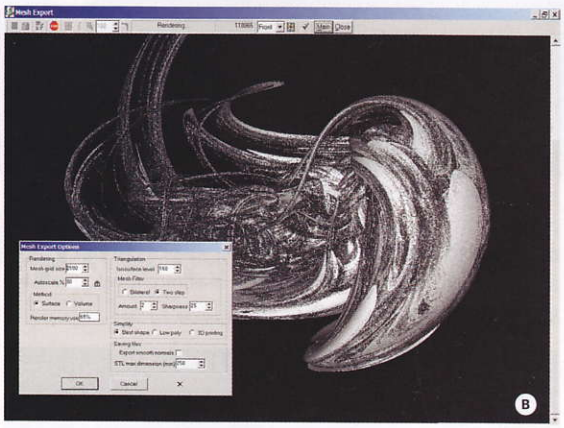
Lee Griggs is a freelance 3D artist, who works in areas such as TV, film, advertising and product visualisation. He has also taught 3D and VFX at several institutes including the National Film and Television School in the UK

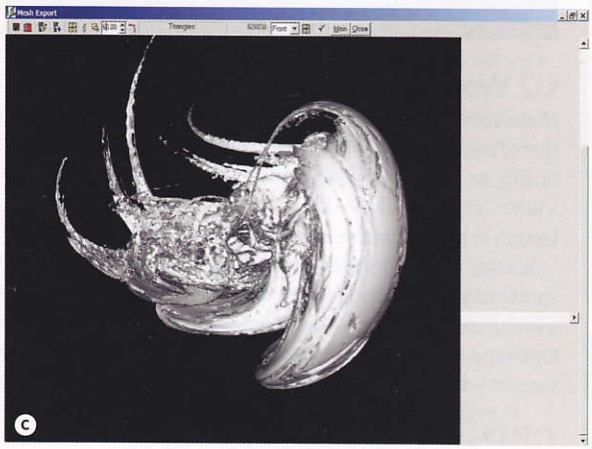
Here you will find out how to create a photorealistic render of an abstract sculpture. You will start off by using XenoDream and some of the settings required to create an optimal polygon mesh. We will go over the processes involved in preparing the model for use in Maya, before exporting the mesh. Using Maya's deformation tools we will change the shape of the mesh to create some interesting variations. We will then focus on lighting and shading the model using physically accurate lights and materials in mental ray. We'll also go over some of mental ray's camera features to enhance the photorealism and believability of the image. Lastly, we'll explore some of mental ray's render settings in order to get the most out of our render and achieve an ultra-realistic finish.

XenoDream

Create and export a mesh using XenoDream







A Choose one of the many sample files from XenoDream's database of preset shapes

B The Mesh Export Options enable you to choose how dense you want your mesh to be when exported

C Start a new render and then triangulate the mesh before preparing it for export

Trial XenoDream

If you don't yet own XenoDream, you can download a trial for free from **www.xenodream.com/downloads** – it has no time limit, but does come with certain restrictions. The full product can be purchased for just $119 through **www.xenodream.com**.

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

Lee Griggs

3DArtistonline

Personal portfolio site
www.leegriggs.com
Country UK
Software used
XenoDream, Maya, mental ray
Expertise Lee works mostly in lighting and rendering using mental ray for Maya. The work he's involved in can range from print advertising to animation for TV and film

Concept

The aim is to produce a complex and realistic-looking abstract image that the viewer questions how it was done. It should look like it has been shot in a photographic studio. We're aiming to produce an image that blurs the line between reality and CGI.

01 Open sample file

XenoDream is a unique 3D graphics software that gives you results that would be difficult or impossible to achieve using other tools. It enables you to construct or explore from the simplest shapes to the most complex 3D fractal structures. XenoDream has a large database of sample files with which to get started. Go to File>Open sample file. The one we are going to use can be found in the Organic folder, titled 'Diatom 1.xep'. However, feel free to choose any sample file that interests you A.

02 Mesh Export Options

Click on the Mesh Export Options and increase the Mesh grid size value. Start off by doubling the amount. The value you choose is dependent on how much memory you have in your machine. Make sure the Render memory use is not set too high, otherwise you may run out of memory. Leave the other settings at their defaults B.

03 Start new render

Click on the Start new render icon; this will begin a new rendering. Stop the process when the mesh looks solid as in the screenshot. Check the mesh within its different views to see if you have a sufficient amount of detail. If not then increase the Mesh grid size under the Mesh Export Options. Once you are happy with the way it looks, you are ready to triangulate the mesh, so click on the Triangulate icon. Before we export the mesh, we must reduce the number of polygons that XenoDream has created. Having a lighter model means quicker render times in Maya and makes for a more manageable scene file. Click on Simplify mesh and then reduce the percentage without reducing any detail in the mesh. Depending on the mesh, 60% is a good figure to use. Finally click on Smooth mesh and then save the mesh as an OBJ file C.

Maya

Prepare the mesh for rendering in Maya

Using large Area lights

Always use raytraced shadows as they give the most physically accurate attenuating shadow possible, while depth map shadows are nowhere near as realistic. Raytraced shadows can be noisy, especially if your lights are very large. Increase the shadow rays in order to compensate for any noise. Also make sure to use a Quadratic decay rate. This means the light energy will fall off as it radiates outwards, using the inverse square law – just as it does in the real world.

Turning on a light's Visibility setting will ensure that the light is visible in the reflections of your materials. Using physically accurate materials means that you will get realistic reflections of your light source in them.

In mental ray you'll find Physical and Portal light shaders that can be plugged into your Area light for extra realism.

04 Open OBJ mesh in Maya

Once you have opened the mesh up in Maya, select it and go to the Attribute Editor. By default the mesh will not be visible in reflections or refractions. You will need to enable them in the Render Stats for the poly surface in the Attribute Editor. We should now get some interesting reflections in our model D.

05 Soften Normals

By default, the polygon mesh will look quite faceted close up. We could smooth the polygon, however, this would add many more polys to an already dense mesh. Doing so would add to render times as well as slowing down our viewport and making our scene unwieldy. We can smooth the appearance of the mesh without increasing the polycount by softening the 'normal' edges. Select the mesh and, under Polygons, select Normals>Soften Edge. This will smooth the appearance of the model and reduce any polygon faceting E.

06 Add a Sculpt deformer

Now let's have some fun! Select the mesh and choose Create Deformers>Sculpt Deformer. Change the mode to 'project' and increase or decrease the Max Displacement to exaggerate the effect. You can also play with the scale, rotation and translation of the deformer. Try experimenting with some of the Non-linear deformers too and see what interesting shapes you can achieve. You can apply a combination of different deformers to get some dynamic shapes F.

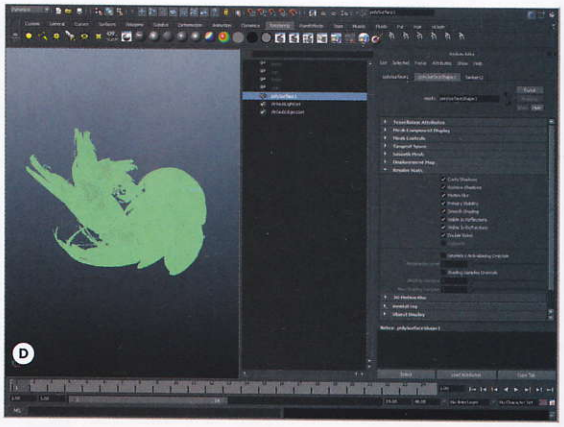
D Activate Visible in Reflections and Refractions within the Attribute Editor

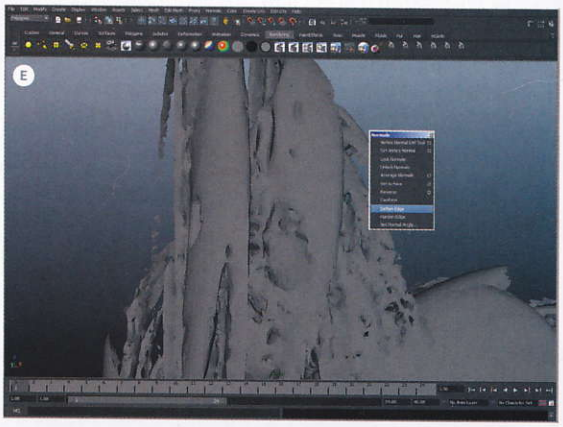
E Softening the normal edges of the mesh will help to reduce the appearance of any polygon faceting

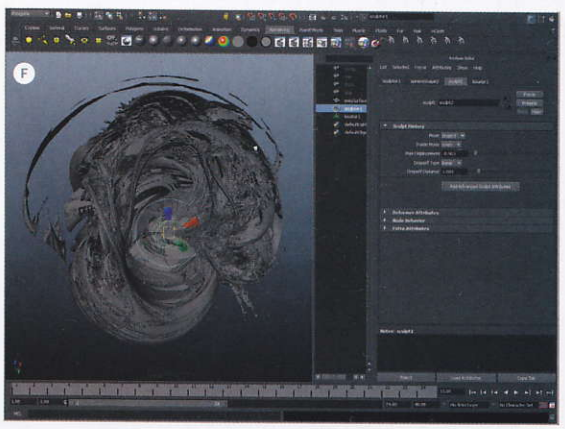
F Use Maya's animation deformer tools to twist, bend and sculpt the shape of the mesh

G Use Maya's camera tools to create an interesting composition

H Use the mia_exposure_ photographic node to change the exposure and gamma settings of a render





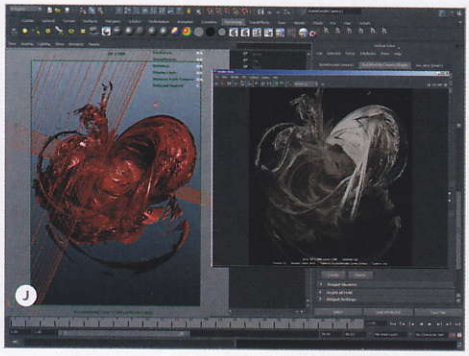


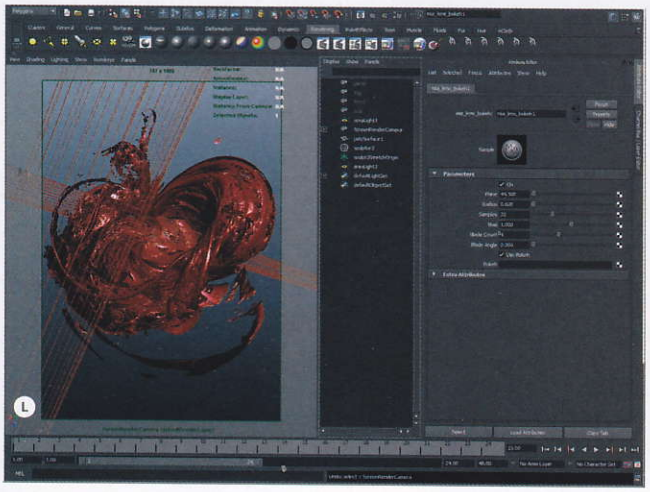
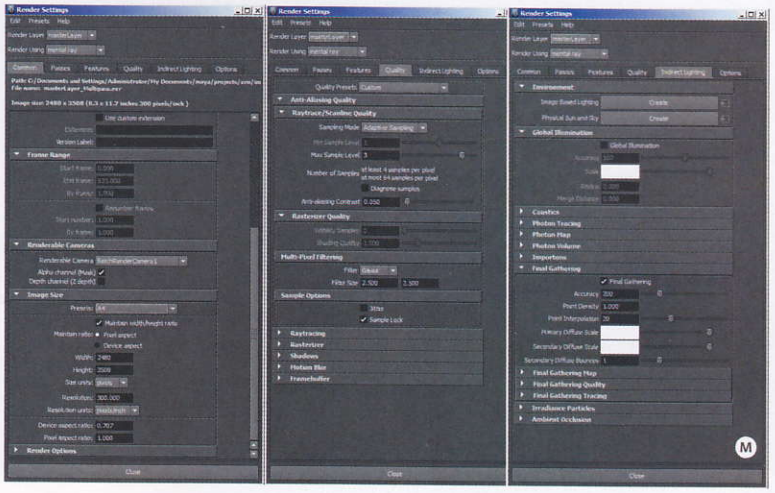
07 Working with the camera

Move the camera around the mesh until you find an angle that is pleasing. Remember the Roll tool can be useful for finding an interesting composition; it can be found under View>Camera Tools>Roll tool. Also try changing the Focal Length in the Attribute Editor of the camera in order to 'massage' your composition into shape. Once you have something you are happy with, duplicate the perspective camera and call it something like 'ScreenRenderCamera'. Open the Channel box and lock the channels for the new camera – that way it won't move by mistake G.

08 Photographic exposure node

Click on Lens Shader and connect a mia_exposure_photographic node to the camera. This will gamma correct our resulting renders for test rendering within Maya. In the Attribute Editor for the photographic exposure node, increase the Cm 2 Factor to something like 3,000, otherwise our renders will look black. The cm2_factor is the conversion factor between pixel values and candela per square metre. Lower the F Number to something like 6. This will open up the aperture of our camera lens and lighten our renderings. You may want to experiment with these values according to taste H.



Shading and lighting

Now we will focus on illuminating the model

09 Apply realistic materials

We now need to replace our dull flat grey Lambert material with something a bit more interesting. In the Hypershader create a mia_material_x and a misss Fast Skin material. Change the preset for the mia material to a matt finish as the misss Fast Skin material has its own specularity settings. Open up the Advanced section of the mia material and middle drag the misss Fast Skin material onto the Additional Color slot. This will combine the two materials together. Assign the mia material to the polymesh ❶.

10 Light the model

Create an Area light and position it in the middle of the mesh. Change the light's Decay Rate to Quadratic and increase its Intensity to something like 400. This will give us a more realistic real-world light falloff in our scene. Under the mental ray section of the Area light, click on Use Light Shape and change it to a cylinder. Leave the High and Low samples at their default settings for test renderings. However, you will need to increase the values to something like 32 for the High Samples and 16 for the Low Samples for the final render. To see the effect of the light on the mesh, select Lighting>Use All Lights or press '7' on your keyboard in shaded mode ❷.

11 Improve the lighting setup

Scale the light so that it looks like a fluorescent light tube. Try test rendering using mental ray. Scale, rotate and position the light until you get something that looks interesting. Try to pick out any interesting details in the mesh and get a soft quality to the render. Remember that scaling the light up will increase the intensity of the light within the scene and will create larger, softer shadows; this is what we want. If it becomes too bright, you can compensate by reducing the light's Intensity setting and moving it away from the mesh ❹.

12 Depth of field

Create a locator and position it where you want the focus distance to be. In this case the sculpt deformer is pretty much where the focus should be. Select the deformer or locator and go to Display>Heads Up Display>Object Details. Make a note of the Distance from Camera value. Select the camera, scroll down to mental ray, select Lens Shaders and create a mia_lens_bokeh. Type in the Distance from Camera value into the Plane attribute of the mia_lens_bokeh. Lower the Radius value in order to reduce the DOF effect in our camera. If the DOF is too noisy, you may need to double this value ❺.

13 Render settings

Now you're ready to render. Open the Render Settings window and change the Image size to A4 under the Common tab. In the Quality tab, choose Adaptive Sampling and set the Max Sample Level to 3. If you do not have much time to render the image, you can lower it to 2. Change the Multi Pixel Filtering to Gauss. The default Filter Width and Height Size can produce results that are too soft, though, so try reducing the values to 2.0 or 2.5 to get something a bit sharper. Click on the Indirect Lighting tab and switch on Final Gather. Increase the Accuracy to something between 150 and 200 and increase the Secondary Bounces to 1 ❻.

❶ Use a combination of the mia material and the sss fast skin material for realistic results

❷ Use cylinder Area lights to create realistic and easily controllable lighting

❹ Increasing the scale of the light will help to soften and lighten the mesh

❺ Authentic depth of field can dramatically improve the realism of your renders

❻ Fine-tuning mental ray's render settings will result in something that looks more photographic

6 hours render time
Resolution: 2,480 x 3,508

3DArtist

Masterclass

Continuing from his three-part extended tutorial, Gavin Goulden now reveals how to import and display game characters using the Marmoset Toolbag

It is very important to display work in a game art portfolio in a real-time setting. To show that you can make an asset that is not only technically sound but that also functions in a game engine or environment is a huge plus. 8monkey Labs has given the community a very powerful and affordable piece of kit to do just that: the Marmoset Toolbag. In this tutorial, I'm going to use the Futuristic Femme character we have created in previous issues as a test case to demonstrate my workflow for importing and displaying characters within Marmoset with the intention that it will populate your portfolio or demoreel.

Final rendered image using the Marmoset Toolbag and Photoshop for type and accessory graphics

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Futuristic Femme

> The Marmoset Toolbag [has] a standard set of materials and postprocessing FX that you can use freely and easily after importing your assets

Essentially what you want to show in your portfolio is that you have the skill to do your actual creative job as a game artist (modelling, texturing, unwrapping, etc) and that you have the technical know-how to put your work into a game situation either with model viewers, real-time screengrabs from your favourite 3D software or directly from a game or game environment (such as screenshots from a project you have worked on).

For personal work, I choose to go with 8monkey Labs' Marmoset Toolbag. The main reasoning behind this is that viewport shaders, though very powerful and accurate to a game engine, are dependent on your screen resolution. So, if you have a lower resolution, it will be very difficult to put out anything at print quality. On top of that, renders can get messy and hard to manipulate due to the background being baked into the shot itself. Full-on game engines can take a lot of effort to get a simple image out to the public. For example, in the Unreal and Source engines, you will need to understand how their shader systems work and how to create your own or manipulate pre-existing materials to get up and running. On top of that, you generally need to build a test environment to view your work properly, or take screenshots from a model viewer; this runs into the same problem as viewport shots, which can take a lot of time to not only build but adjust to get the 'right' shot. Though the skills of creating shaders and basic levels could be a desirable lesson for some, generally art directors and leads are looking for 'pretty images', so if you aren't a great level builder or lighter and focus mainly on character art, those flaws could damage the appeal of your strengths.

The Marmoset Toolbag eliminates this problem by having a standard set of materials and postprocessing FX that you can use freely and easily after importing your own assets. It also has a screenshot and turntable capturing system that requires the click of one button and is dependent on the limits of your videocard – enabling you to take large screenshots without needing to stitch images together.

Other engines – and especially 3D app viewports – can also have trouble handling complex alpha-dependent models such as hair. Various viewports handle this information differently and can require a lot of tweaking to get it right – and even then may need some touchups in post. Many game engines have focused highly on this and have their own way of sorting alpha information. The Toolbag has a very quick and simple way to test this by enabling you to flip through rendering methods, control alpha intensity and letting you toggle between casting shadows and back face culling for the best results.

The Marmoset Toolbag also has predefined lighting setups, materials and postproduction FX to make the process of creating portfolio images much easier. The lighting setups are themed to time of day and are basically mimicking the natural light source of the sun. The power of the sun and positioning in the sky can be adjusted easily to cast favourable shadows on your character. Materials already exist for skin, Phong-based materials, flat (more or less straight diffuse texturing) and anisotropic that are accessible through a dropdown menu – complex shader setups that are available out of the box. With the Render editor, you can access premade postprocessing FX including a high bloom effect, sepia tone, black and white and even a Polaroid style. These effects can be further adjusted to your liking and saved/loaded for future use. This is generally an 'under the hood'-type level of rendering that you would need an in-depth knowledge of in other engines.

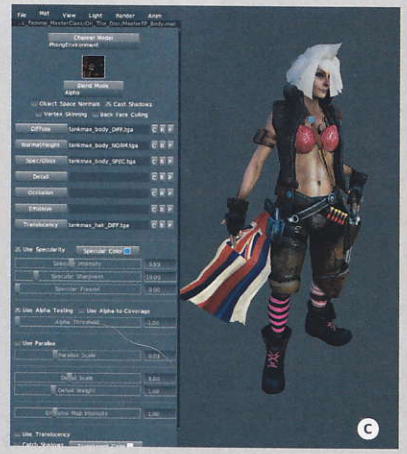
Unless you have a vested interest in being an FX artist or creating your own rendering effects, Marmoset really makes this process much more straightforward. Practically eliminating the need for a lighting artist and rendering engineer for your own personal work – or at the very least, making the process much quicker and easier so you can focus on the fun, more creative aspects.

In this Masterclass, I'll use this powerful tool to cover the various points from exporting your character model, all the way to the final exported image. Through these steps you will see just how easy it is to have good-looking portfolio images up and running for your website or demoreel, but also learn the different settings that can be adjusted to your specific tastes. We will begin by covering Marmoset Toolbag's unique importing method – including the importance of grouping meshes together at the 3D app level, as well as handling alpha-dependent items such as hair. How to apply textures to these models through the Toolbag's Material editor, adjust the material properties plus how the Toolbag handles meshes and textures follows. From there we will move on to setting up physical lights as well as the sky lighting method, rendering properties, tweaking and setting postprocessing FX and then, finally, exporting your portfolio-ready image.

Navigation in the Marmoset Toolbag

Marmoset has a unique navigation system that can set it apart from its counterparts. By holding down Shift and clicking the left mouse button, you can control the light source of your scene or 'the sky'. This will enable you to change your lighting setup quickly and easily. By holding down Opt/Alt, you access camera controls, not unlike a 3D application. By hitting Opt/Alt and the left mouse button, you will orbit around the camera's focal point, middle mouse pans and the right mouse button zooms in and out. On the other hand, by pressing Cmd/Ctrl you access the model level; left mouse button physically rotates the model while the middle mouse button translates the model.

3DArtist Masterclass



Ⓐ OBJ model files imported into the Marmoset Toolbag showing multiple 'chunks' and default materials

Ⓑ Creating materials is quick and easy – just click on New Mat... and navigate to your project's location

Ⓒ Bringing textures into the Toolbag is extremely straightforward; simply click on the name of the texture you'd like and then navigate to the image you created

Ⓓ Using simple materials for hair textures along with the Alpha Threshold setting

Ⓔ Marmoset Toolbag enables you to adjust your View settings to a level usually left behind the scenes

Real-time renders in Marmoset

01 Import models into the Toolbag

It is essential in your 3D program to group your models together such as: body, hair1 and hair2. Marmoset will import these models as 'chunks' even though they're all part of a single OBJ file. The Toolbag will import these objects from newest to oldest in history. In this case, I had to have two separate hair models for sorting issues – basically, hair closest and furthest from the head. Click on Open Mesh and navigate to your OBJ file to import your model Ⓐ.

02 Create materials

The Toolbag applies a default material automatically on all of the models that are imported. So, unlike other applications, material IDs and materials applied to the model during export have no effect. Creating materials is quick and easy and will basically be creating a duplicate of the default material that you can then modify and save as your own. Simply click on New Mat... and set the name of the file and where you would like the materials to be saved. If you click on Save Mesh & Materials at any time it will save both your model and materials and the material application to those models – very handy. To apply a material to your model, select the model in the menu with a material selected and click Apply Selected Material. Once a material is active, it will be opened and closed by parentheses Ⓑ.

03 Apply textures

As you can see in the dropdown Channel Model menu, there are multiple types of materials you can choose from. Since this character has many different materials and not just skin, I am going to choose a Phong material. This enables different texture slots including the usual Diffuse, Normal and Spec as well as some other options such as Emissive and Occlusion. Click on the name of the texture type and navigate to your texture map to load it into the Toolbag. Hitting 'C' clears the field, 'R' reloads the texture – in case you edited it – and 'P' brings up a mipmap preview Ⓒ.

04 Alpha materials

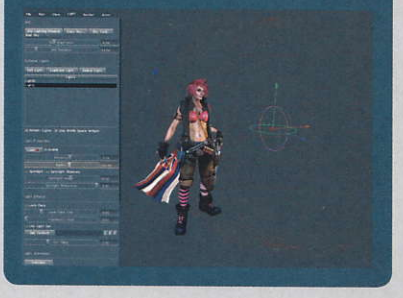
I like to use very simple, flat materials for my character's hair as I usually have a lot of diffuse information in the textures. The Marmoset Toolbag will use the Alpha channel of the Diffuse texture and the strength of this alpha can be controlled via the Alpha Threshold slider. By deactivating Back Face Culling you enable materials to be two-sided, meaning that the textures will appear on the front and back of a model. You can also make it so shadows are cast by your model, which offers an option for self shadowing Ⓓ.

05 Adjust your View properties

By clicking on the View tab, a list of settings will become available to you. These enable you to rotate your model, camera and skylight and then reset those settings in case something goes wrong. You can also tweak the visibility of your wireframe at this point – which is incredibly helpful for modellers – plus its colour and boldness, as well as adjusting the direction of your Normal map channels in case they were created inverted (there can be a conflict between what a 3D application considers 'right' in the green/Y channel and what game engines consider correct) Ⓔ.

Dynamic lights

I prefer to use the Marmoset Toolbag's sky lighting system – but you can easily add point lights to your scene for extra effects. For example, if your character had a section that glowed – or was firing a weapon – you can add a dynamic light to your scene by clicking Add Light and moving or rotating it in your viewport, giving the illusion that the part of this model is actually casting light. The dynamic lights added to your scene are additive to the sky light, so you may need to adjust the Intensity and Radius values of the light to how much you want it to affect your model.



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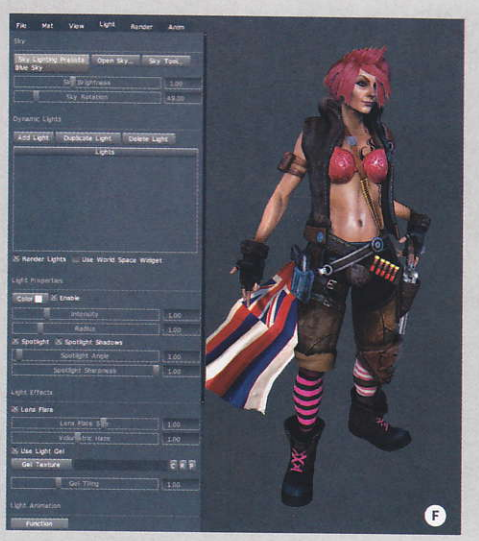
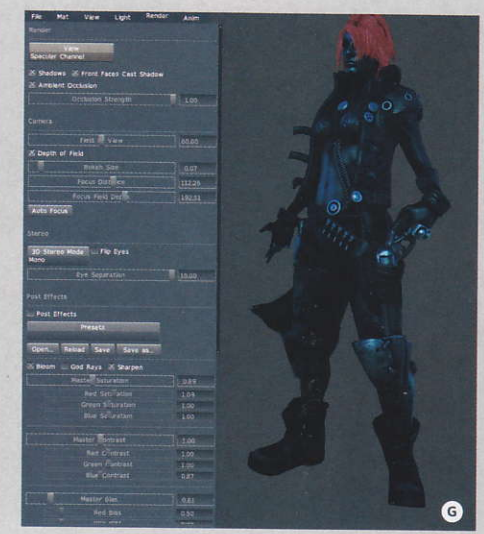
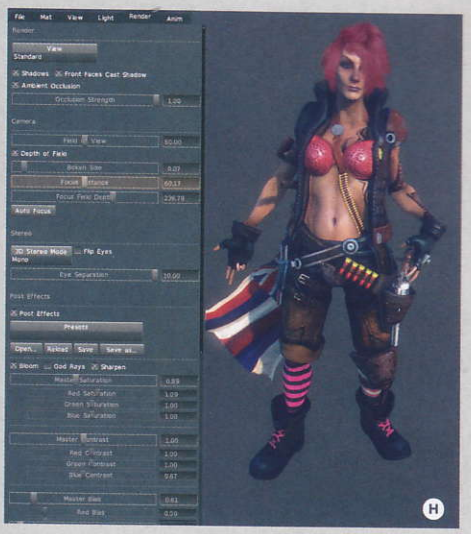






06 Light your model

Marmoset Toolbag uses a sky lighting system. Basically, your light is the sun and you can control the rotation of the Earth by holding Shift and the right mouse button, and moving your mouse. You can also select from a list of lighting situations from dawn to dusk. This enables you to choose the most favourable lighting scenario for your model. You can add dynamic lights too that will be additive to the skylight set up to your scene and adjust its properties. These lights function more or less like point lights in a 3D app F.

07 Render your image

Under the Render tab you can select specific elements that you would like to see displayed. This can be helpful for things like showing how your Spec map is taking effect as well as local Ambient Occlusion and simple flat texture models. You can enable and adjust the strength of shadows and AO that will show up in your final render too. You can also set the depth of field your camera will have for added realism and the field of view of your camera for tighter or wider angles G.

08 Postprocessing effects

Another great feature under the Render tab is the ability to enable and adjust postprocessing effects. Generally, these are things such as Bloom or Sharpening. You can also adjust the brightness and contrast for your final image. The Toolbag has many different presets to choose from, ranging anywhere from your cliché brown, bloom heavy 'next-gen' setting to an interesting Polaroid effect. You can play with these settings or create your own by adjusting the default settings. These postprocessing effects can also be saved and loaded for other projects H.

09 Turntables and wireframes

Expanding on the settings for your final image, you can set the speed of a few different turntables that can be recorded. You can set the speed and direction of these turntables by playing with the sliders for each item. Mesh will physically rotate your model, Sky will rotate your light source and Camera will rotate around your model – keeping the light source static I.

Beauty shot

Though taking renders from the Marmoset Toolbag is incredibly easy and quick, it doesn't hurt to spend some time adjusting your renders in Photoshop and giving them a nice layout with information on the model and your contact information. It is very important to think of composition within your image – even if it is just a single character for your portfolio. You will want to choose a camera angle that complements the model, doesn't focus on trouble areas and doesn't distort the proportions of the character. Even though the Toolbag makes it extremely tempting to go crazy with postprocessing FX, it can lead to the problem of 'too much of a good thing'; Too much bloom, over sharpening and distortion of your original image can distract from what the original piece looked like. So remember, less is more!

10 Output

Going back to the File tab, you can modify your output settings. Screenshot size will dictate how big your screenshot is; beware though this is hardware dependent and entering a setting that is too high for your machine to handle can cause crashes. Enter your output location and press F12 to create a screenshot. The Toolbag will output an image with alpha information to this location. Here is where you can also save a turntable render by entering the output location and hitting F9 to start and stop your render which will be exported as an AVI file J.

F There are multiple lighting schemes available through the Sky section under the Light tab

G The Render tab is where you can control the depth of field in your image as well as global shadows and occlusion

H The Marmoset Toolbag makes it easy to apply postprocessing effects to your image and save the settings for future projects

I No need to set keyframes for your turntables and fiddle with render settings in your 3D software – Marmoset creates turntables in just a few clicks

J Export your image or turntable video at the push of a button

3DArtist Questions & answers

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including Blender, Maya and 3ds Max

Need help fast? Join th

The advisors

Blender

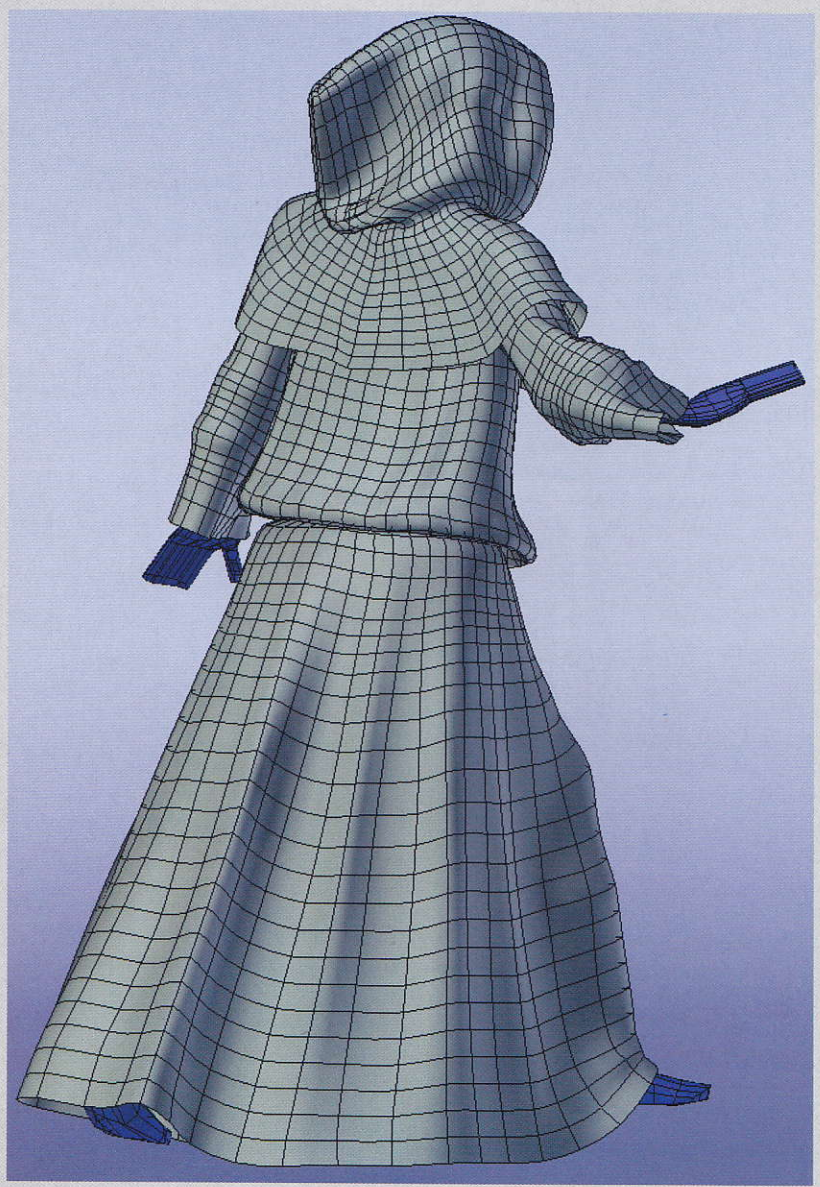
Richard Culver
www.richardculver.com

Richard reveals the trick to making your characters' clothing earn its keep by giving Blender's cloth dynamics a quick dressing down

Dressing to impress

Blender

"What's a good approach to creating clothes for an animated character?"



Most CG animated productions – even large studio outfits – make very limited use of things such as hair and cloth. Very often clothes on characters don't move much and cloth dynamics are limited to small sections of the clothing only in certain shots. The reason is because this is a time-consuming effect with a list of practical limitations given the current state of technology in most 3D applications.

Blender is no exception. But by learning what these limitations are and why, you can overcome them in creative ways and yet still have good cloth effects that flow and move with the character.

Probably the most important thing to understand about cloth effects for an animated character is that collisions are the key. The entire cloth effect depends on making collisions work, whether that's collision with the body, collision with other objects or the cloth colliding with itself: 'self collision'.

A typical cloth setup includes at least one Cloth Object and at least one Collision Object (usually the body of the character). Both the Cloth Object and the Collision Object have a distance setting. This can be measured in real-world units based on a Blender Unit. So the setting of 1.000 would be one metre. The combined distance of these two settings gives you a 'forcefield' between these objects, which means they never touch each other directly.

Because clothes on a character can be extremely dynamic and because the calculations of the computer can give in to the forces of gravity and inertia, quite often the Cloth Object can penetrate the Collision Object. If this happens the Cloth Object will stick on the inside by then colliding with the inner surface of the Collision Object, not only destroying the effect but possibly even causing the entire simulation to blow apart.

Another problem can occur under armpits where the optimum distance for the rest of the effect to work correctly causes the Cloth Object to be forced into itself and into the Collision Object.

Another factor is the mesh density of the Cloth Object. You can only get as many wrinkles and folds as you have polys – just like any other displacement effect. Also low-poly cloth objects don't fold much so they are more prone to penetration.

To get a desired effect, it is a matter of finding solutions to these problems and balancing the ideal with the realistic and practical.

01 The setup

Your setup consists of the body that is animated with weighted bones. Your Cloth Object is tied to the body in a number of strategic places by creating a vertex group used in the Pinning of Cloth section. The Cloth Object also uses an Armature modifier. The same places where the cloth is pinned must also have a weight map for the bone(s) it is pinned to, otherwise it remains tied to world space A.

02 The Collision Object

The Collision Object only needs to approximately mimic the body for collisions. It should not have any facial detail, fingers, toes or anything that does not directly collide with the cloth – otherwise the simulation will take much longer. Remember the computer

growing community at www.3dartistonline.com

Maya

David Kenneth Lam
http://artofdavidlam.com

David is a lead character artist at EA Burnaby and also co-founder of the Rydan Workshop. He's been in the games industry for over 11 years

3ds Max

Ross Board
www.rossboard.co.uk

This issue, Ross's illuminating Q&A (sorry!) discusses how to work night-time lighting into your interior scenes using 3ds Max and V-Ray

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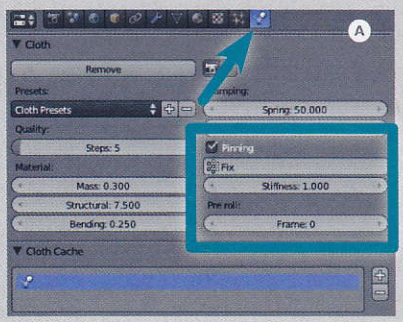
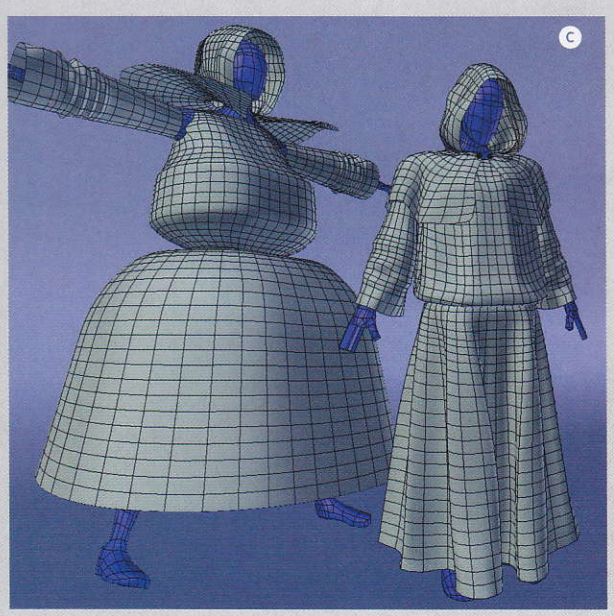


has to calculate each point in both the Cloth Object and the Collision Object. And for rendering, you only need to include the parts of the high-definition body that will be seen B.



03 Drop the Cloth Object

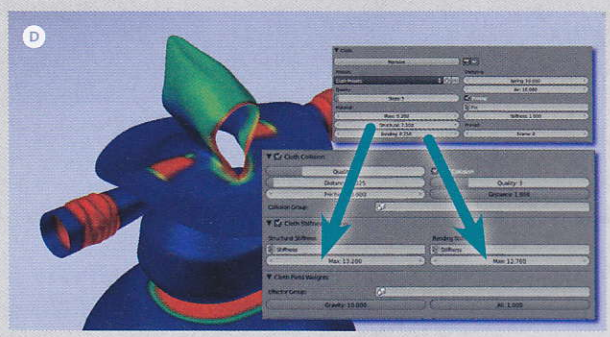
Much experimentation can be done at the modelling stage to anticipate what will happen when the cloth drops onto the body. Think of it as holding the cloth in the air in certain ways to create an effect when it falls over the body. In this example, the solution for the armpits was to virtually remove them. They will not take part in collisions because they are fixed and also covered by the cloak's hood C.

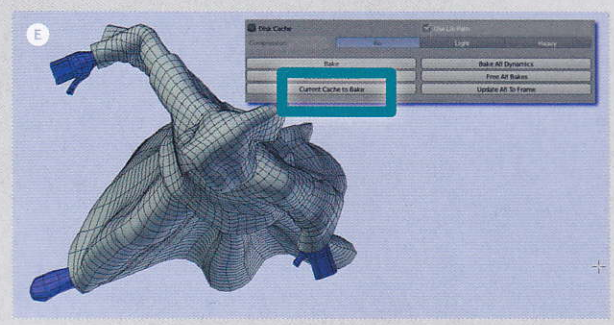
04 Vertex maps

Vertex maps are not only a part of weight painting and pinning – they can also be used to paint areas of the cloth where you want to have more stiffness and/or hold its shape. This is controlled in the Cloth Stiffness Scaling tab. Where the Weight is 0%, the values in the Structural or Bending settings will be used. Where it is 1-100% it will use the Structural Stiffness and Bending Stiffness depending on the weight value D.

05 Simulate and bake

Make sure the Cloth Object and the Collision Object are in the same layer. Then you can play the animation to calculate the cloth simulation. Depending on your objects and computer, this can take a while. Experimentation with your system and your patience will determine how many polygons to throw at it. When the simulation is done you can use Current Cache to Bake which will preserve it after you save the file E.





06 Finishing touches

After you have the simulation baked you can then add more modifiers on the stack after the cloth such as the Subdivision Surface or Displacement modifiers. If you try to do this or try to edit your object before you bake you will have to run the simulation again. You may also want to paint Bump maps or even use Displacement maps for some finishing touches to add more detail such as folds or seams for authenticity's sake F.

Final notes

It has been my experience that using a simple quad mesh for the Cloth Object is best. Modifiers can be added after the simulation is baked for smooth rendering or displacements.

Blender cloth can be very bouncy and unruly. After much experimentation here are some key settings that help tame the Cloth Object for animation. The rest of the values can be left at the Cotton default.

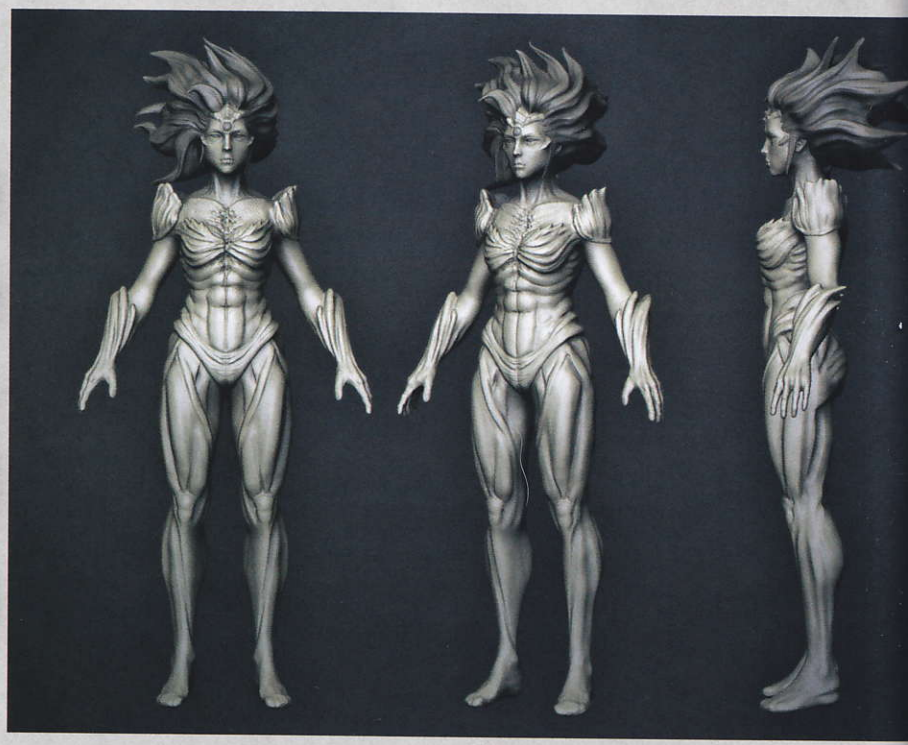
We used the settings as follows: Gravity 10.000; Collision Distance .010-.020; Collision Quality 5; Self Collision Quality 3; Structural 7.5; Bending .250; Spring 50.000; Air 10.000; Structural Stiffness 12.000; and Bending Stiffness 13.000.

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including Maya, 3ds Max and Blender

Blend Shape and Wrap deformers: a powerful combination

Maya

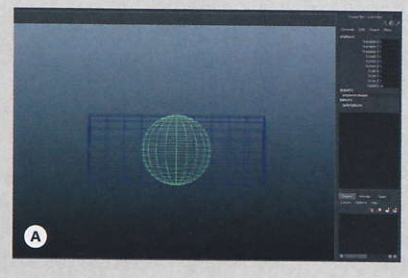
"What are Wrap deformers and how do I use them?"

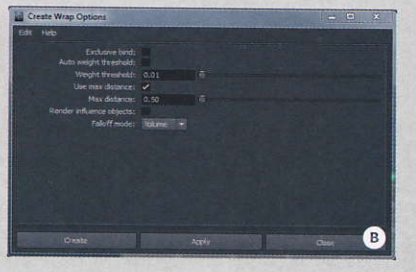


Deformers in general are often overlooked. They are a powerful tool for quick and significant alterations to your models. In this article I'll be focusing on the powerful capabilities of Wrap deformers that will help from a character modeller's perspective.

Wrap deformers have been around and tucked away neatly in Maya for many versions. I find many junior artists neglect and/or simply don't know how to utilise deformers properly. Wrap deformers, sometimes referred to as indirect skinning, use an influence object to wrap a skin over the top of your target object or mesh. Common uses are for swapping low and high-resolution meshes in a scene and for simulating muscle flexing.

First I'm going to show you the basic setup of deforming one object with another using a Wrap deformer. Then I am going to show you how to pair up Blend Shape and Wrap deformers to create a powerful workflow; this is a method I use to pose my characters on the fly. At times, building characters can be an involved and tedious process. This method allows for a controlled non-linear workflow where I can continue to iterate my character and then dig up old poses I created previously and re-apply them to my final mesh. There are some restrictions with this method that I'll go over later, but it's nice to be able to spice things up in the character creation process. I find being able to change gears every once in a while – along with the ability to jump to different aspects of a project – really helps to keep me motivated to see it through to the end.





01 Getting started

I'd like to begin by setting up a simple scene in order to describe the basic concepts. In the Polygon module, go to Create>Polygon Primitives>Cylinder and click the square option box. In the pop-up window, enter these variables: Radius 1, Height 5, Subdivision Axis 20 and Subdivision Height 10. Then hit Create.

Rotate this cylinder by 90 degrees in Z using the Channel Box. Here we have produced our simple arm. Now it's time to make our influence object.

Click Polygon Primitives>Sphere. This will provide us with the default settings and you should now see a ball appear within a tube similar to that which appears in screengrab A.

02 Wrap options

Here's where we activate the awesome Wrap deformer. Toggle to the Animation module (for a shortcut, you can just hit F2). Select the cylinder primitive then – holding down Shift – click on the sphere. Both objects should now be selected. Next go to the top menu and click Create Deformers>Wrap and activate the option box.

Below is a brief description of the Wrap deformer options. Play with them yourself to see how they affect your results.

Exclusive bind – This will make the target surface act like a rigid-bound skin; note that it disables the Weight threshold option. Generally I don't activate this setting.

Auto weight threshold – This option is on by default. This sets the optimal influence weight by ensuring every point on the mesh is affected by the influence object. Good for wrapping similar objects together.

Weight threshold – Manually enter wrap influence based on the proximity. This can change the overall smoothness of the deformation effect. 0 (smooth) to 1 (sharp).

Use max distance – For those who want a max value to affect the influence distance.

Max distance – Value in units of maximum distance of influence.

Render influence objects – Whether influence objects will appear in a render.

Falloff mode – Volume: the selection is based on a spherical volume around the centre of the region of influence. Surface: the region is based on where the influence conforms to the surface contour B.

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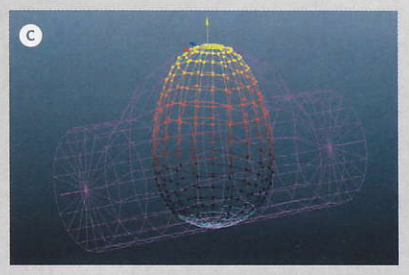
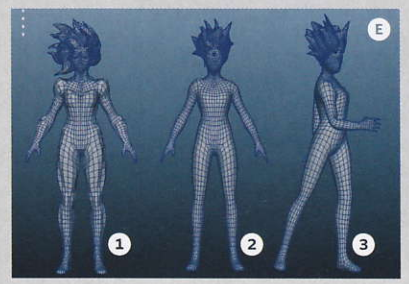
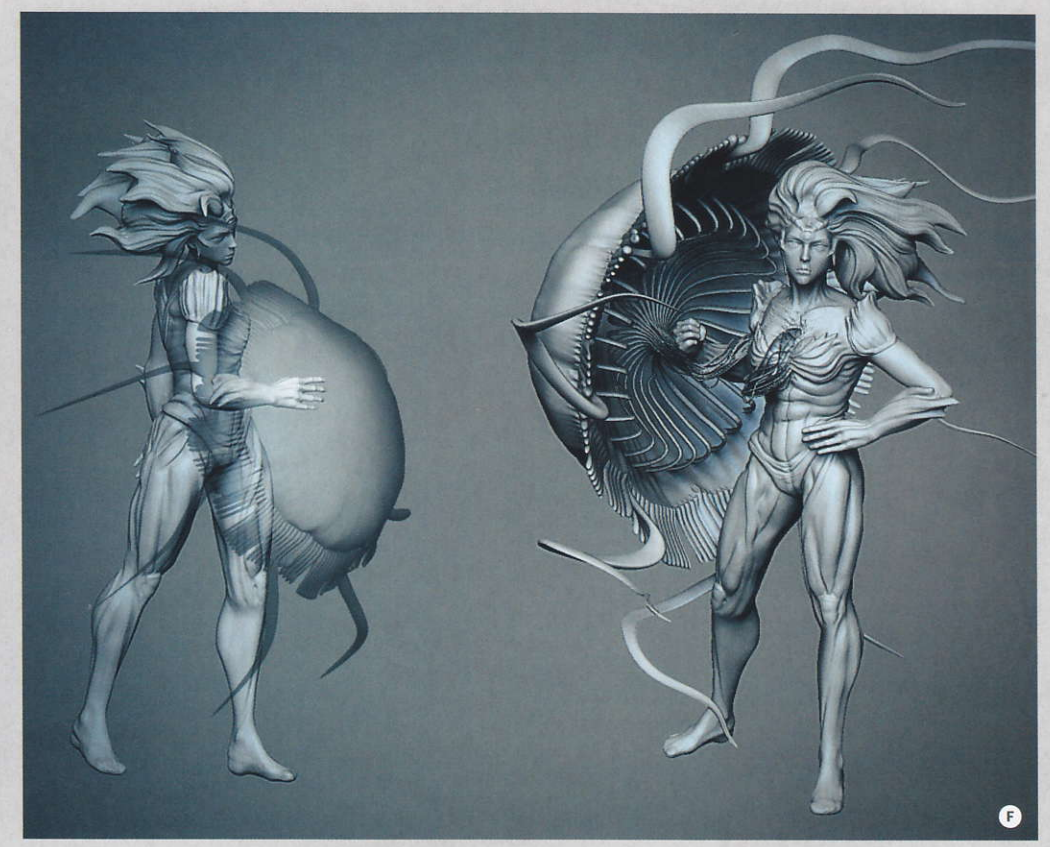






03 Simple bicep bulge

Notice now when you click the sphere, the cylinder will turn pink; this is a good way to check that you've set up the deformation properly. Go to Point mode (F9 hotkey) and click the single top point of the sphere. Now use Soft Selection and expand the falloff down to about halfway down the sphere (the hotkey for Soft Selection is 'B' on the keyboard). If you want to expand the falloff, just hold 'B', left click and drag in the window then let go once you have the desired selection. Finally, move the point up (use the 'W' hotkey) and watch the bicep rise! Your end result should look something like C.

04 Add Blend Shape deformers to the mix

The Blend Shape deformer enables you to edit a mesh with another modified version of itself. In a new scene, create another sphere as described in Step 1; name it 'sphere1'. Now duplicate the sphere (Cmd/Ctrl+D). Maya should have named the new primitive 'sphere2'. With sphere2 selected, modify it with Soft Selection as previously. Now click sphere2 and, holding Shift, click sphere1. Again in the Animation module, go to Create Deformers>Blend Shape. No option box this time as we will use default settings; a breakdown of the options of blend shapes would take another Q&A! To verify it worked again, select sphere2 and sphere1 should turn pink. The final step is to view the deformation. Go to the top menu and select Window>Animation Editors>Blend Shape. You should see a window pop up with a slider like that shown in screengrab D. Drag the slider up and down and see your hard work pay off.

05 Take it to the next level

This is where the fun begins. We will now tag team the Blend Shape and Wrap deformers together to form Devastator! Okay... maybe not. But it is powerful, as you will see.

For this setup, see the three example models in screenshot E. Model 1 is a low-resolution version of my final complete model in a neutral pose. Model 2 is an early iteration of the same model in a neutral pose. Note that the topology of 1 and 2 is different – this is the key that makes this technique very powerful. Model 3 is a posed version of 2 and has the same topology and vertex order.

Now what I am going to do is blend models 2 and 3 together and then finally wrap 1 to 2. When I drag the Blend Shape slider, 2 will animate to 3 and drag 1 along for the ride. Now I have the pose of 3 on my final mesh 1. Isn't it wonderful?

Keep in mind that the closer the silhouettes of the wrap-deformed objects, the more predictable the results. So when you're about to wrap the models, make sure the influence and target mesh are on top of each other, unlike the spaced-out 1 and 2 models. Also note, the Blend Shape and Wrap deformer settings for this step should be kept at the Maya defaults.

06 Pose central

This step shows a couple of examples of poses I created using this technique for a model I made for the Rydan Workshop. It's really helpful to be able to play with posing through the model creation process. Making many iterations helps me decide where I want to go with the final shot.

This tag team of Wrap and Blend Shape deformers can also be used to propagate generic facial shapes from one character to another. The possibilities are endless F.

The importance of being ordered

There are a few key elements I'd like to reiterate in order to guide you down the road to success for this tutorial. First, which may be obvious, make sure to select the elements in the correct order for the deformers to work properly, ie for Wrap deformers, the target mesh(es) must be selected first and then the influence object. For Blend Shape deformers, shape targets should be selected first and then the base shape. For help during these procedures, be sure to have the Help Line active. The Help Line itself can be found at the bottom of the Maya window; to toggle it, simply go to Display>UI Elements>Help Line.

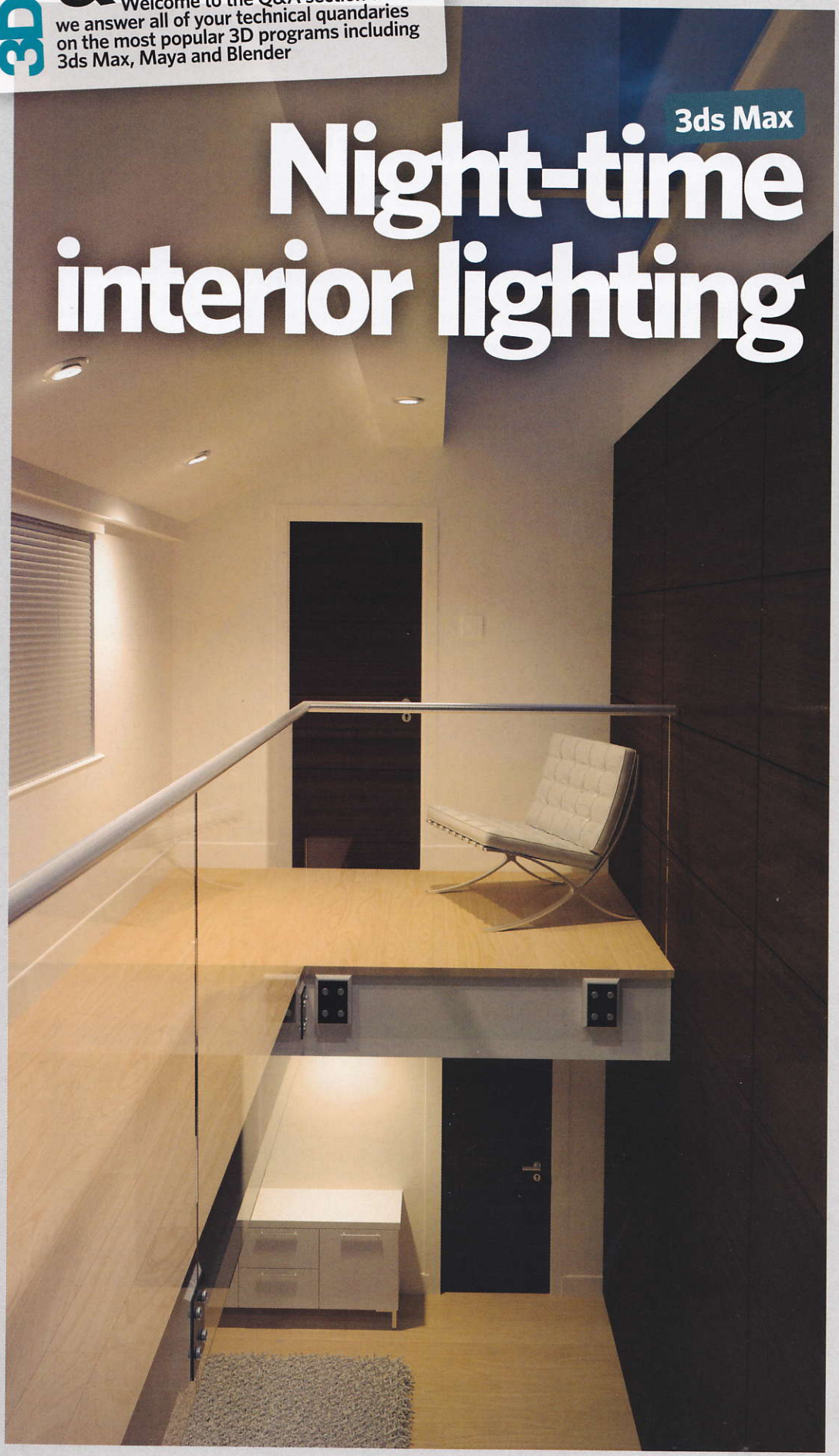
Secondly, vertex order must match for blend shapes to work properly. That is, the meshes must have the same vertex count and must be ordered in the same manner. Any time you edit a mesh, the vertices are reordered. If you try to use conflicting meshes, the blend shape operation has no point of reference to apply the deformation. Maya will give you an error message as a result, which no one wants!

Questions & answers

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including 3ds Max, Maya and Blender

3ds Max

Night-time interior lighting



How do I create evening lighting systems with 3ds Max and V-Ray?

When creating architectural illustrations, night scenes can make particularly dynamic images and show a scene in a 'whole new light' – like most things, however, there is no exact science to creating perfect night shots.

In order to get an idea of how your image should look, it is often best to look to photography and find some good examples of professionally shot interior images as a starting point. You will quickly become aware that it is very rare to see a true 'night-time' interior shot and most images are taken during the period known as 'blue hour', where it is neither day nor night; I would recommend you focus your initial efforts towards this area before experimenting with other options.

There are many techniques involved in creating convincing lighting, however it is in the details that a scene will succeed. A good way to start working towards this is to use Illuminating Engineering Society (IES) lights. IES lighting files contain information about how a light dissipates from its source and its intensity – factors that can vary massively, from the wide beam of a floodlight to the narrow, sharp beam of a halogen spotlight. Most good lighting manufacturers provide these files free for download (ERCO, Philips, Lithonia, etc) and they can be previewed in the handy freeware app, IESviewer (PC only; www.photometricviewer.com).

It's important to remember that most problems will arise as a result of not enough light information in V-Ray; while this may seem counterintuitive at first, most inexperienced users encounter this problem at one time or another. I cannot stress enough that a good night scene is the result of careful light placement and an overall good exposure. As soon as an area becomes starved of light, issues begin to occur and ramping up V-Ray settings will not help – this will only add time to your renders.

An effective night shot can be fiddly and it's important not to get sucked into a constant stream of test render after test render, especially if you're relying heavily on glass and other high-demand materials. So, with this in mind, I'll demonstrate a workflow that should explain some of the key issues you may run into. For this tutorial we'll be using a relatively simple scene, however the principles are the same for most situations.

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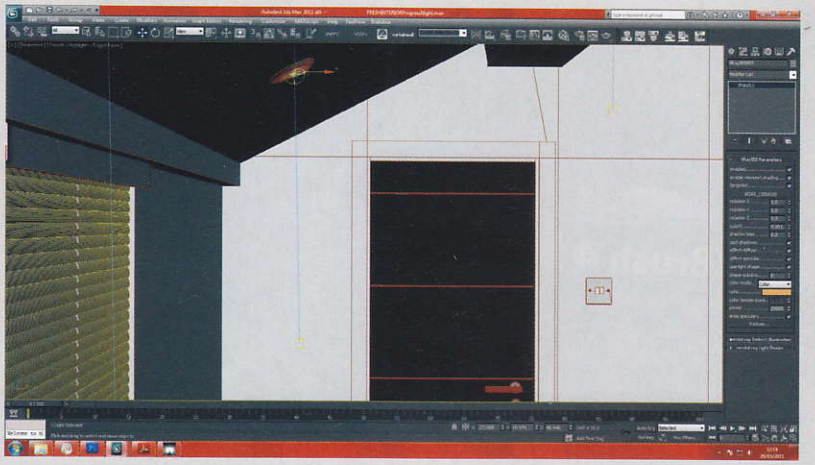
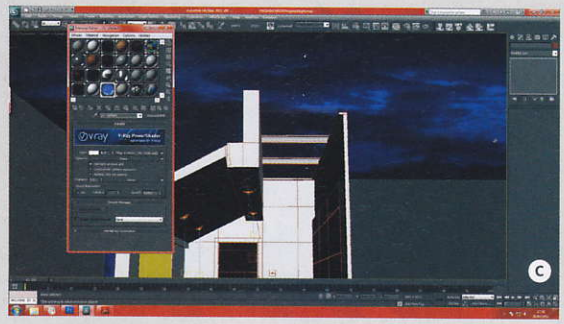
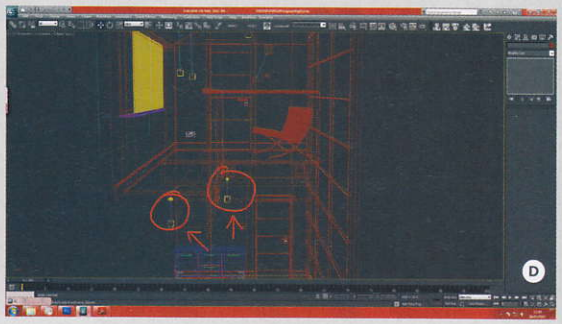
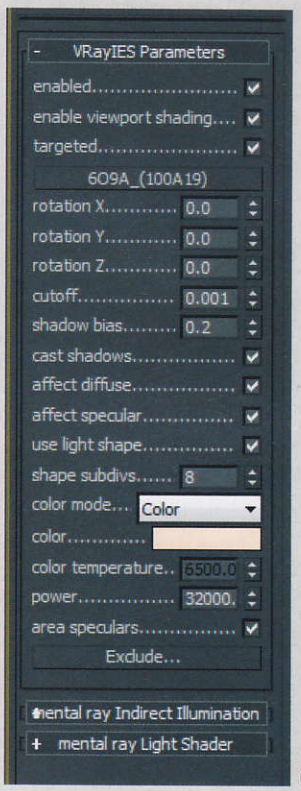








01 The scene

First things first, it may seem like a fairly obvious step, but first consider whether your scene is suited to a night lighting setup and/or what steps may be required to make it usable; consider the placement of each light and fitting, identifying any areas that could suffer from poor illumination along the way. In this scene, we have four visible lights and a sky to work with initially A.

02 Hit the lights

Now, to begin lighting the scene, ensure all default lights are off and place V-Ray IES lights in the downlight housing, then assign an appropriate (wide/narrow beam etc) IES profile to the light in the Modifiers palette – Power and Color values will need changing at a later stage to achieve a desired look. I have also added a small invisible V-Ray Spherical light inside the housing so as to create a faux bulb B.

03 Create the sky

With the main four artificial lights in place it is now time to add the sky. If you are working with a scene with large windows or openings I would recommend considering using an appropriate evening HDR. This scene only has one major window so I have opted to assign a VRayLightMtl with a sky texture to a plane above the window. Be careful not to make the sky too bright as night can soon become day this way C.

04 Downstairs lighting

The tutorial scene has a very obvious division between levels and, now that we should have an acceptable level of light on the top floor, it is logical to illuminate downstairs. To do this I have copied two of the upstairs IES lights and moved them into position under the landing, positioning one to cast light onto the back wall and the other to act as a fill light. They aren't visible to the camera so fittings can be disregarded D.

05 Balance power & colours

All lights are now in place and the remaining step is to adjust the Power setting to ensure that everything is properly illuminated; tweaks can be done from within the light source's modifiers and adjusted globally using a VRayPhysicalCamera's Aperture/Exposure/ISO settings. While choosing your Power settings, it is advisable to choose Color values for each light also. To set the mood, a subtle orange works well – especially when using a large blue sky E.

06 Rendering

To render the scene, I have used common settings for architectural visualisation in V-Ray: Linear Workflow with Global Illumination etc. I would, however, recommend that if you're an inexperienced V-Ray user to check out the SolidRocks plug-in (http://solidrocks.subburb.com) – a handy script that enables users to get basic settings correct very quickly with little hassle F.

F

See the light

When getting started, it's only too easy to assume that night scenes warrant low, patchy lights with no fill areas and this, as a result, has caused no end of frustration for newer users. If you want to gain a better understanding of how a good evening scene is composed, look to photography and perhaps go out on some shoots. A good knowledge of the relationship between camera settings (shutter/ISO/aperture) and how they affect your image will aid your future 3D work no end.

3DArtist

Back to basics

Andrzej Kuziola shows the process behind Sarcofago to reveal the basics of sculpting in ZBrush 4

ZBrush 4

Sculpting & modelling in ZBrush 4

This tutorial uncovers the foundations of digital sculpting and modelling with ZBrush 4 and encourages you to develop your own methods using this powerful 3D application

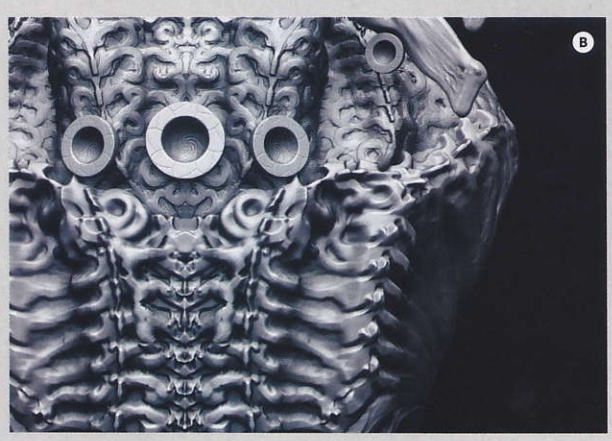
A Utilise all the ZBrush tools and be limited only by your imagination

B A combination of custom-made alphas and Clay brushes enables you to achieve some great results

ZBrush is a powerful digital modelling and sculpting program, which – thanks to its innovative tools and workflow – revolutionised the 3D world.

It enables artists to focus on the creative, conceptual parts of the process, offering an intuitive ability to quickly create whatever you imagine, without having to worry too much about the technical aspects. All this is thanks largely to a few unique tools.

To begin the process, you first need a mesh and there are a few different ways to obtain meshes in ZBrush. The method that you choose will wholly depend on the kind of model you ultimately need.



The first, and probably most common, method is to use ZSpheres as a rig for a new mesh. By pressing 'A', you can quickly preview how the final mesh will look. Once you've finished the construction and are happy with the proportions etc, to add more detail, you need to change the rig to Adaptive Skin and hit Make PolyMesh3D.

An alternative way to create a mesh is by ZSketching. This is based on the previous method, but this time you mostly paint armatures with spheres, moving and creating them one by one.

ZSketching has the ability to snap onto an already-existing surface and is also good for prototyping and experimenting with new, more abstract shapes.

There are three workflows for ZSketching: you can either sketch freely in 3D space; use ZSpheres structure; or sketch on the surface of SubTools.

Another way to create a base for sculpting is to use the generic primitives provided by the program, such as cubes, spheres and cylinders. If you need more custom-made primitives you can obtain your desired start shape and mesh density by modifying the Initialize settings.

Retopologisation and mesh extraction are yet another method for creating new

An alternative way to create a mesh is ZSketching... [this] has the ability to snap onto an already-existing surface and is good for prototyping and experimenting with new, more abstract shapes

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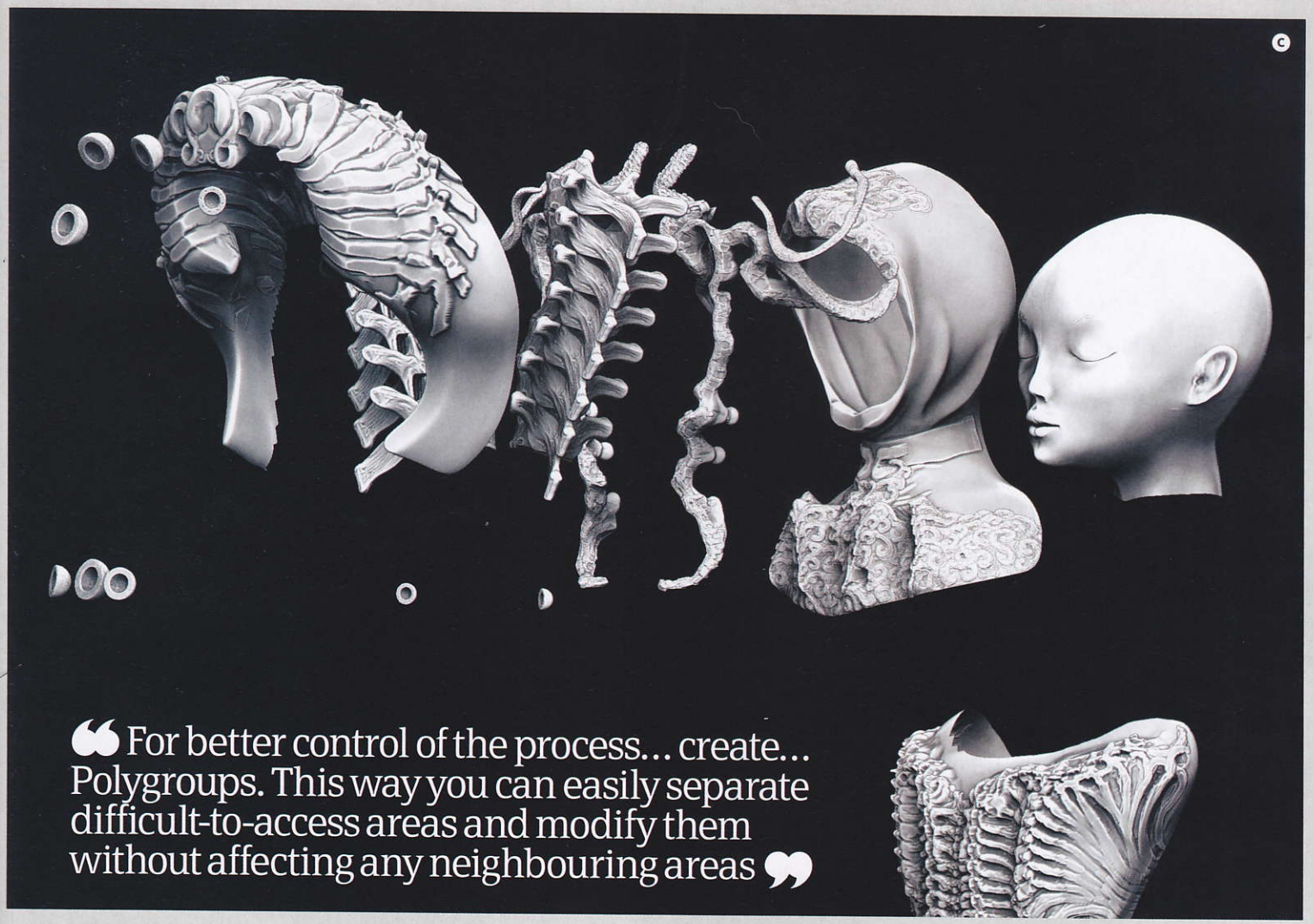


> For better control of the process... create... Polygroups. This way you can easily separate difficult-to-access areas and modify them without affecting any neighbouring areas

meshes inside ZBrush. Both of these require a pre-existing object as the basis for the new mesh. With retopology you can control the structure and density of a new object, but extraction is a much faster way to create new objects. All you need to do is to mask the areas where you want a new mesh and then press the Extract button. You can modify Smoothness and Thickness settings for even greater control.

As seen in this month's 'ShadowBoxing with style' tutorial on page 66, you can also create new meshes with the ShadowBox tool. This is a new method for easy and rapid creation of sophisticated shapes, which is based on shadow projection. You create a new mesh by masking the planes and then modifying the density of the output mesh by changing the resolution of the planes.

You can import base meshes with established topology from external 3D applications too, but personally I prefer – and find it more comfortable – to develop my models without being limited by topology, which you can always optimise once the design is ready.

With your base prepared, it's time to begin sculpting and developing the form.

A rule of thumb is to start from a low-density mesh and then gradually subdivide it to add more details. The best way is to utilise each subdivision level as much as possible before switching to a higher resolution. (For your convenience, using shortcuts like 'D' and Shift+D greatly speeds up moving between subdivisions.)

For better control of the process, it's handy to create a series of Polygroups on your models. This way you can easily separate difficult-to-access areas and modify them without affecting any neighbouring areas.

Splitting your models onto multiple SubTools can also help to manage your project and you can divide each SubTool and work on it individually. This lets you add much more detail to your models and sculpt multimillion meshes fluently without killing your hardware.

The ability to work with different layers and store Morph Targets gives you more control over the process too and enables you to achieve some very interesting final results. I always store Morph Targets before I start adding details so I can revert all changes to the initial shape when needed. Additionally, I tend to work on layers as they allow for non-linear workflow. I often find it's easier to achieve the desired look by overdoing the details and then decreasing Layer Intensity.

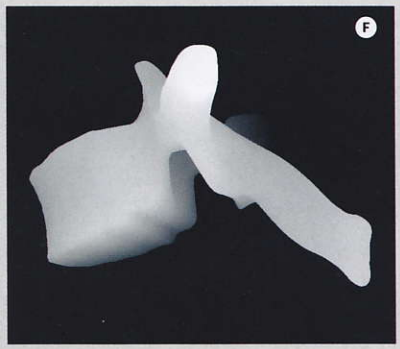
Once the model is in Edit mode you can begin sculpting on the surface. There are many brushes in ZBrush and each has unique properties. All of them can be tweaked using controls in the Brush menu, but you can also adapt brush shape in the Alpha palette and change how a brush moves over a surface in the Stroke palette.

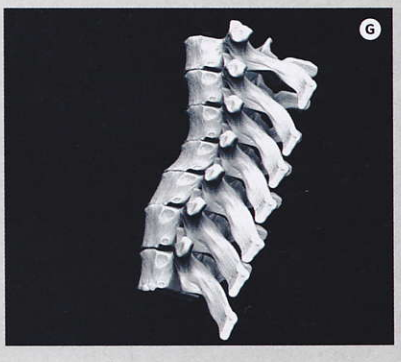
All the ZBrush brushes have common modifiers. The Opt/Alt key is used to inverse operations. Shift calls Smooth brushes. Cmd/Ctrl invokes Mask brushes, while Cmd/Ctrl+Shift hides/shows geometry or calls up Clip brushes.

By combining all of the tools and techniques in ZBrush 4 you can create almost anything you can imagine, which makes it a very attractive program to digital artists with a traditional sensibility.

© Do not limit yourself to one mesh; you will get much more detail by utilising many SubTools

3DArtist Back to basics





Workflow tips

01 Topology

I used topology to create a part of the sarcophagus. I wanted it to follow the character shape so I used a woman's bust as a base and appended a ZSphere as a SubTool. With the ZSphere selected, I activated Edit Topology and started creating a new mesh. Hitting 'A' helps to preview how the final mesh will look. To finish the process, I converted it to Adaptive Skin mode and then to PolyMesh3D D.

02 Standard and Smooth brush combo

The Standard brush is a basic brush, which displaces the vertices. I use it at all stages of development in tandem with the Smooth brush. Working with a low Z Intensity enables me to gradually add volume to a surface. For a more natural look on organic models, I alternate its use with the Smooth brush. When you turn on the LazyMouse setting and increase the Z Intensity, the Smooth brush is great for strands of hair E.

03 Create a custom alpha

Creating a custom alpha will speed up your surface detailing process no end. Create an object (those with more complex shapes work best) or re-use existing forms, draw it and then use the Grab Alpha From Document command. With a new alpha active, sculpt in LazyMouse mode or use it with Drag Rectangle Stroke to achieve desired results F.

04 Move brush and Transpose

The Move brush is one of the main brushes I use during the development stage. It helps to modify the shape and establish the silhouette of the model.

To move vertices, simply click and drag on the model. I prefer to use it on models with a lower subdivided geometry and increased Draw Size to affect large forms. To move and arrange in space, separate SubTools and use Transpose. You can use this feature to deform shapes too G.

05 Inflate brush

The Inflate brush displaces geometry by pushing the vertices along their normals; I always use it to add thickness to the lips. With the Gravity Strength modifier turned on, it's also great for creating skin folds, fat or creases in fabric H.

06 Slash 'n' brush

The Slash2 brush was primarily developed to produce a 'cutting into the surface' effect, but after some minor modifications, it is great for sculpting fur or hair.

All you need to do is alter the AlphaAdjust Curve by moving the middle top and bottom points outwards from the centre. The AlphaAdjust Curve can be found in the Alpha menu I.

Be organised

The Lightbox is another new handy ZBrush 4 feature that keeps all your past projects organised and easily accessible. Now when you look for your favourite alpha, brush or want to re-use an old mesh, you don't need to interrupt your process and waste time trawling through all the files on your hard drive. With just one click you have access to assorted materials, tools, projects, alphas, brushes, etc. Just remember to always save inside the folder managed by the Lightbox.

D Use the Density slider to control the density of adaptive skin

E Use the Standard brush with LazyMouse and custom alphas to get cool results

F When you Grab Alpha From Document, try different angles of the object

G Merge similar objects into one SubTool; it will be easier to handle them

H It's best to use the Inflate brush gradually with a low Z Intensity setting because it is easy to overdo the effect and get puffed polygons

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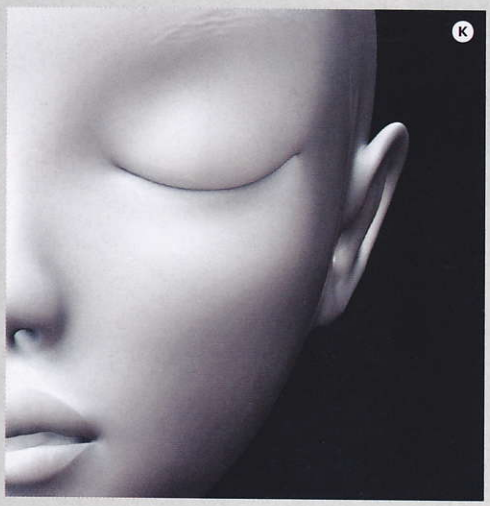


I Use a regular Slash2 brush to refine hair

J Use the Dam Standard brush to finish and sharpen edges of eyelids

K The area of topological influence of the brush can be changed in the Brush menu via the Auto Masking options

L Use ClayFinish and ClayPolish brushes instead of Polish to get more organic final results

M Use the Armature brush to paint spheres freehand in space without being limited by underlying geometry

07 Dam Standard brush

The Dam Standard brush can be found inside the Brush folder of the Lightbox and is great for fine wrinkles and detailed cracks as it cuts a surface while applying a pinching effect. I recommend you put it in the ZStartup/Brushes directory to load it every time you open ZBrush J.

08 Move Topological brush

The Move Topological brush is a variation of the Move brush. It enables you to modify a surface without affecting the surrounding geometry and is great for tweaking areas such as the eyes or mouth. Use it to close eyelids or modify the shape of lips without deforming the whole area K.

09 Clay brushes

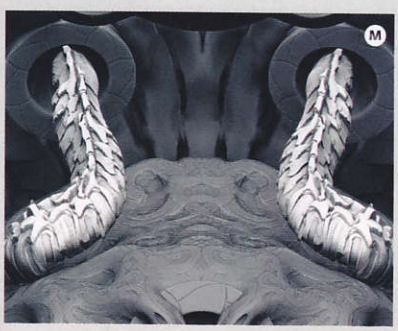
Clay and Clay Tubes are my favourite brushes for experimenting and developing ideas. All Sarcofago ornamentation is done with these tools.

I usually use them to sketch rough, abstract details and then to develop the results further. To equalise the surface, I use TrimDynamic and Polish brushes; these are great companions to Clay brushes L.

10 ZSketching

Append a ZSphere as a SubTool to your models, activate EditSketch and start painting creeper-like structures. The 'A' key shortcut enables you to preview how the final mesh will look. To finish, create a Unified Skin from it.

Increase the Subdivisions Count and Skin Resolution values to retain details. Click Make PolyMesh3D on the skin to add any final touches M.



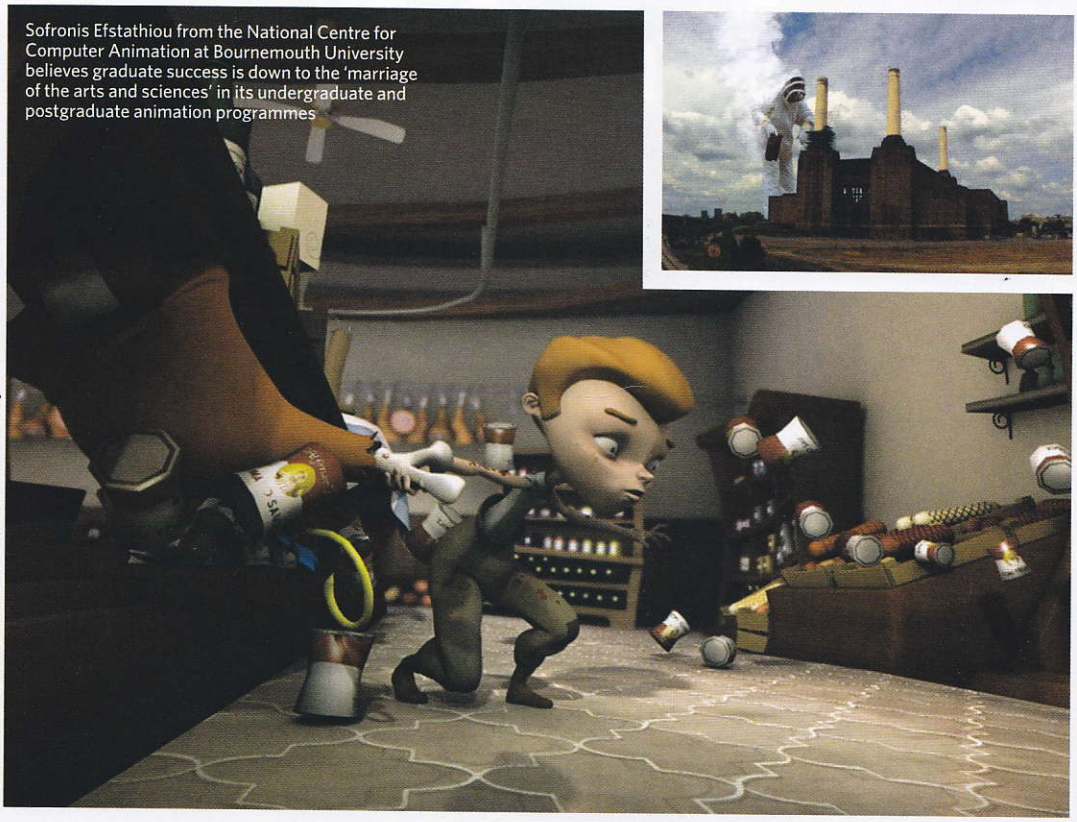
> The Move Topological brush is a variation of the Move brush... and is great for tweaking areas such as the eyes

GoZ: for a multi-app pipeline

GoZ is a great new ZBrush feature that enables you to easily and quickly access any 3D app of your choice and use its helpful tools to speed up and improve your ZBrush process.

If you would like to work from the beginning with an optimised base mesh, you can import it into ZBrush with just a single click.

If you feel that you can do some modifications more efficiently outside ZBrush, or need greater control over certain aspects, you can move your model to another 3D program where you can, for example, add more density to parts of your mesh or even create a new model based on the transferred one. Once you're happy with the result, simply move it back into ZBrush and continue sculpting.



Sofronis Efstathiou from the National Centre for Computer Animation at Bournemouth University believes graduate success is down to the 'marriage of the arts and sciences' in its undergraduate and postgraduate animation programmes

Images courtesy of NCCA at Bournemouth University

NCCA glows with NESTA report findings

As the National Centre for Computer Animation celebrates its 21st anniversary, so does it enjoy the finding that nearly 50 per cent of students working in the UK's VFX industry hail from Bournemouth University. Graduates have recently worked on the likes of *Inception* and *How to Train Your Dragon*, while in the world of games, graduates at Framestore, Sega Europe and Konami are leading the way.

A

B

UK to change its ways

NESTA's Review on Skills for Video Games and Visual Effects recommends how the government can help its UK talent keep up pace in the rapidly expanding game and film industries

A Tobias Keip is a current student at Bournemouth University, studying MA Digital Effects at NCCA. This still is from 2010

B Dzung Phung Dinh is currently on the BA (Hons) Computer Visualisation and Animation at NCCA, Bournemouth University

KEY RECOMMENDATIONS

- Computer science must be a part of the school national curriculum
- Higher Education Funding Council for England (HEFCE) should include industry-accredited specialist courses in videogames and visual effects in its list of 'Strategically Important and Vulnerable' subjects that merit targeted funding
- Young people must be given more opportunity to study art and technology together

A landmark report from the National Endowment for Science, Technology and the Arts (NESTA) found that, worryingly, a blind spot for UK students was preventing them from seeing career opportunities available in games and films. Not helped by the education system's seeming failure to prepare students for such opportunities, a review authored by Ian Livingstone and Alex Hope aims to transform education in the UK to help the country stay in the race as high-tech creative industries the world over offer ever-increasing competition.

"Videogames production plays to the UK's twin strengths of creativity and high technology and ticks all the boxes for the digital economy," Ian Livingstone, life president of Eidos says. "We need to transform young people's passion to play videogames into a desire to make them, while equipping them with the right skills for the industry. In the brave new online world, a second 'golden age' for the UK industry beckons. It's an opportunity which shouldn't be missed." But if we're not equipping students with the right skills needed by the industry, our graduates will be missing out. And it's not just the students lacking the skills – many of the teachers interviewed show concerning missing abilities. "...growth in the UK is being held back by a lack of the people with the right skills," Alex Hope, managing director of Double Negative says. "We need people with the specialist skills – computer science, physics, maths and art – on which our industry relies. They are crucial not just to our industry but increasingly to the other high-tech creative industries. We need to take a fresh look at the skills being taught throughout the education pipeline and ensure students are being prepared for the industry and we have the talent available to meet demand." To read the review in full, visit www.nesta.org.uk/areas_of_work/creative_economy/skills_review.

Future projections

The report suggests that the UK's videogames industry could generate £1 billion more sales by 2014 if it overcomes existing barriers to grow and keep up with global competitors. And should the visual effects boom continue at the rate seen in previous years, the total is estimated at potentially reaching £610 million by the same year!

> "We need to transform young people's passion to play videogames into a desire to make them" **Ian Livingstone,** life president, Eidos

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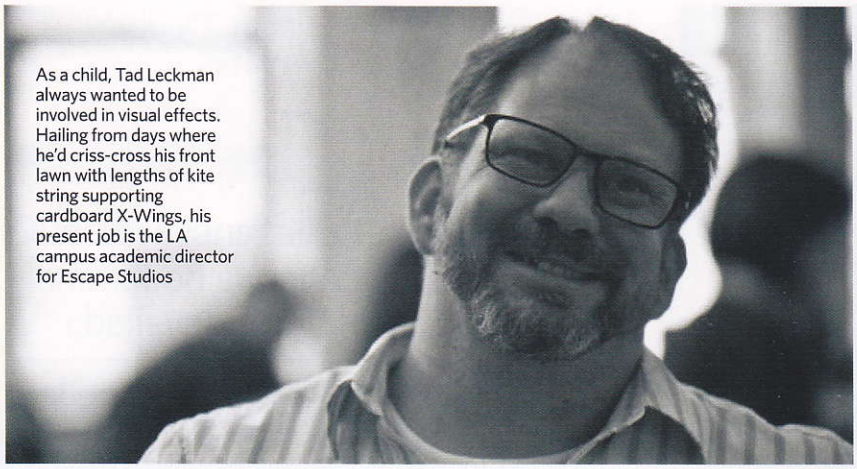


As a child, Tad Leckman always wanted to be involved in visual effects. Hailing from days where he'd criss-cross his front lawn with lengths of kite string supporting cardboard X-Wings, his present job is the LA campus academic director for Escape Studios

Fierce competition ahead

Escape Studios academic director, Tad Leckman, reflects on the future of animation education

While developing curriculum at some of the top art schools in the US, Tad Leckman has seen education evolve over the last decade. "The biggest change is that there even is such a thing as visual effects education," academic director at Escape Studios' LA campus says. And while animation education has been strong for decades, it's also had to grow and evolve to meet changing expectations. 3D Artist asks him what the future of education looks like for animation, VFX and games.

"Options for students. Lots of options," Tad immediately responds. "This is not always a good thing as it can be confusing, but students who do their research will find an increasing number of quality schools to get the type of education they need. The trick is building a strong foundation and adding specialisation on top of that."

With many schools offering four-year degree programmes to provide not just a solid art education but to also introduce the fundamentals of CG tools and techniques, Escape Studios has become a great complement to these, by enabling graduates to specialise and hone their talents, and to develop a showreel that really demonstrates what they're capable of.

"I also see more studios setting up apprenticeship programmes like those at Lucasfilm Singapore and Rhythm & Hues, or like Disney Animation Studios' Talent Development Program or Pixar's Resident Program," Tad continues. "We're also starting to see smaller studios like Reel FX adding apprenticeships. Studios are increasingly investing in junior talent that they'd like to keep with them for many years. Because it is an investment, however, studios are very picky about applicants that they accept into these programmes and the competition is fierce. It's really hard to get in with only a reel of your college course assignments. You need more than that."

One constant that Tad has noticed over the years is that the visual effects, animation and games industries demand that their artists are constantly learning the latest tools, skills and techniques. "You have to love learning – and passing on what you've learned – to succeed in these industries," Tad concludes. "You may have to start off doing the digital equivalent of sweeping the model shop floor, but there is a place for you in digital production!"

Software shorts

Bringing you the lowdown on product updates and launches

A look to the future

Allegorithmic believes online gaming is at the forefront of 3D. With texturing 50 per cent of the work, the Substance product line focuses on a more efficient way to texture: procedurally

"2011 will be a year of transformation," Sébastien Deguy, CEO of Allegorithmic says. Announcing integration of its Substance technology within 3ds Max 2012, Maya 2012 and game engines like Unity 3.3 at GDC 2011, Allegorithmic is taking great steps to becoming the de facto standard in texturing. Mainly known as a middleware company for its products Substance Air and Substance Redux, both dedicated to online game developers, recent strong partnerships and opportunities are encouraging the company to focus on pushing the software and content side of things. "Allegorithmic also has plans to release a new software product some time in Q2 [2011]," Sébastien adds.

"It will be in sync with improvements to Substance Designer, which has recently been adopted by several prestigious universities and by AAA (big budget commercial games) developers like MGS, Bigpoint and Codemasters." Following new versions of Substance Redux released in Q1 and Q2, Substance Air will be upgraded later in the year, targeting Allegorithmic's core audience of online game developers and expanding into the mobile space. "By the end of 2011, Allegorithmic will have ported some of its products onto mobile devices," Sébastien concludes. "The company plans to be active in that booming space since the need for smart textures (compact, dynamic) there is huge!"

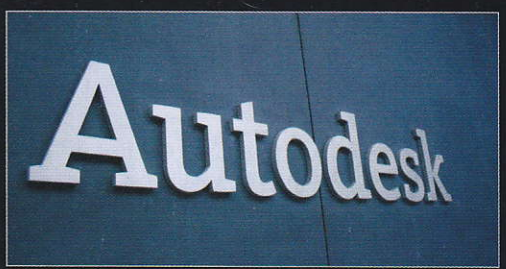
allegorithmic

The Substance product line includes:

- **Substance Air** – This next-generation texturing middleware solution helps users create and manage lightweight, dynamic and versatile textures
- **Substance Redux** – Built for texture compression, this tool reduces the size of your textures for online gaming; it can even be integrated into live games
- **Substance Designer** – Created especially for 3D artists, this product is for those wanting to create and customise dynamic and versatile textures
- **Substance Player** – This dedicated application enables users to rapidly create variations of their Substances and export the results as bitmaps – and it's free!

Insightful snippets

At Autodesk's recent backstage summit in Montréal, senior vice president Marc Petit spoke of the noticeable shift from 2D to 3D digital media



3D is becoming more universal, and as such Autodesk is seeing its products make their way into mobile and web markets. As print media moves onto the virtual shelves, and with social interaction happening more online now than ever before, online entertainment and advertising is demanding entertainment creators and ad agencies to up their game. With these markets set to grow significantly in the coming years, there will be more pressure on 3D to sell products and increase gameplay.

Could this be good news for the prospects of 3D game art students soon to be graduating into an already saturated market? We're likely to see companies set up shop purely to create 3D for online media, and our graduates will have all the sought-after skills.

Industry insider

David Coucharière

3D character animator

3D Artist meets a talented character animation artist who has worked on some of the movie industry's cutest – and most deadly – critters

About the insider

Job 3D character animator
Education Animation degree
Personal website http://vimeo.com/20146179
Biography David is a Belgian 3D character animator who's currently living in the US and working for DreamWorks Animation. He's worked on a range of blockbusters, most recently *How to Train Your Dragon*. He studied Animation at Luxembourg's Technical School of Crafts and Arts

Like many of us, David enjoyed drawing from a very early age. Comics and cartoons that surrounded him were his inspiration, yet it wasn't until he reached 19 that he considered animation as a possible career choice. It was during a student exchange trip that an American friend introduced him to the craft – "That's when it clicked for me," David tells us.

3D Artist: *How did you start out on your career path? Did you attend a college course, work on the job, or both?*
David Coucharière: I got my animation degree from the Technical School of Crafts and Arts in Luxembourg. During the course of my studies, I also spent a few months as an intern at Oniria Pictures, an animation studio in Luxembourg. They then hired me right after I obtained my degree. I contributed to two animated features there as a 3D animator.

3DA: *Can you tell us about your current or most recent project?*
DC: The most recent released project that I worked on was *How to Train Your Dragon*. I was a character animator on that movie, mostly working on the main character, Hiccup, his father, Stoick, and his mentor, Gobber. I was in charge of all the body and facial animation of these characters for each shot I was assigned to.

3DA: *What's the most common challenge you face in your day-to-day work and how do you overcome it?*
DC: For me, the hardest thing I face daily as an animator is getting the performance right. Getting that little beat to come across, finding the right emotional tone for that particular moment, not being over the top yet not underplaying it either, avoiding clichés and so on...

My personal way of solving it is by studying real life. I'll act it out myself in front of a mirror or camera, or have someone else act it out, or watch a lot of live-action footage depending on the shot, draw thumbnails of what catches my eye and so on. I usually gain so much from this process, as there are a multitude of things that 'happen' naturally in real life that I just would not have thought of if I had just tried to create it completely from the ground up. My idea, however, is not to copy, but to study so I gain an understanding of the mechanics of what I am trying to convey. Then, depending on the style or tone of the movie, I create my own interpretation of what I've gathered.

3DA: *What's the best part about your job and why?*
DC: Well, the first thing that springs to mind is the fact my work ends up on screen and can be appreciated first-hand by an audience – that's very rewarding.

3DA: *Putting together a showreel can be tricky – do you have any tips you can offer fellow animators for their showreels and portfolios?*
DC: Well, it depends if your reel is directly intended for the sole purpose of being considered for a position in a company. Also, the whole thing should not exceed three minutes. It's always good to remember you need to 'catch' the attention right away; otherwise people might not even look at your entire reel. Always put your latest work first, starting with what you are most proud of, and pay particular attention to the overall rhythm in terms of shot lengths. I'd also avoid adding a musical soundtrack (a reviewing committee will most likely turn that off), as your animation work should stand on its own.

How to Train Your Dragon TM & © 2010 DreamWorks Animation LLC. All rights reserved

Portfolio highlights

Some of the animation features that David has worked on:

2010 *How to Train Your Dragon*
2008 *Madagascar: Escape 2 Africa*
2008 *Kung Fu Panda*
2006 *Flushed Away*
2006 *Ice Age: The Meltdown*
2005 *Robots*

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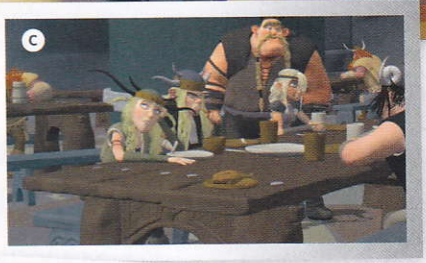

3DA: *Working for a large animation studio on blockbuster films is a dream job for many; what advice can you offer artists new to the scene on getting a job in this industry?*

DC: I'd say practise a lot, set high expectations for yourself and don't stop until you reach them. Don't be afraid of constructive criticism and show your work to people around you whose opinions you trust. Keep analysing the work of other artists, try to understand what makes a scene or a movement work and draw inspiration from real life as much as you can. Train your eye in terms of aesthetics and the understanding of visual design by attending a drawing class or reading instructional books and, most importantly, never give up if it is what you feel passionate about.

> "Keep analysing the work of other artists, try to understand what makes a scene or a movement work and draw inspiration from real life..."

A Hiccup befriends Toothless, an injured Night Fury – the rarest dragon of all – in DreamWorks Animation's *How to Train Your Dragon*

B Hiccup's fellow classmates in Dragon Training are (left to right): Ruffnut, Snotlout, Astrid, Fishlegs and Tuffnut, in *How to Train Your Dragon*

C Gobber and his Viking trainees

D Stoick leads the charge in *How to Train Your Dragon*

E The New Yorkers – Alex the lion, Marty the zebra, Gloria the hippo and Melman the giraffe – bid adieu to Madagascar and prepare to fly back to their Central Park home in DreamWorks Animation's *Madagascar: Escape 2 Africa*